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ETHICS OF HUMAN CLONING IN BIOTECHNOLOGY: AN EVALUATION FROM KANTIAN MORAL PERSPECTIVE

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Although considerations into the issues of human cloning are still speculative, the birth of the first successfully cloned mammal, the sheep Dolly, by Ian Wilmut and his colleagues, as published in the journal *Nature* in 1996, created a shift in the ethical discourse of human reproduction, stem cell research, and even the indirect use of potential ‘persons’ in scientific research that gave no considerations to human dignity and personhood. Owing to the boomerang effect of that biotechnological breakthrough in the United States at that time, President Clinton immediately banned federal financing of human cloning research and asked privately funded scientists to halt such work until the newly formed National Bioethics Advisory Commission could review the “troubling” ethical and legal implications. The Director-General of the World Health Organization (WHO) also joined in the campaign and characterised human cloning as “ethically unacceptable as it would violate some of the basic principles which govern medically assisted reproduction. These include respect for the dignity of the human being and the protection of the security of human genetic material.”

This paper attempts to critically analyse and evaluate the moral arguments put forward for and against human cloning. It argues that attempts to clone human being poses fundamental questions about man; his worth, individuality and dignity. The thrust of the argument derives from Kant’s philosophy on human dignity. A maxim from Kant’s Categorical Imperative states: “Act so that you treat humanity, whether in your own person or in that of another, always as an end and never as a means only”.

*Keywords:* cloning, biotechnology, human dignity, categorical imperative

APTITUDE IN MUSIC: NOT AN ALTERNATIVE FOR A CAREER IN MUSIC EDUCATION

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The presence of music is of great significance in all spheres of life all over the world and Nigeria in particular. There is a plethora of musical talent shows being sponsored by telecommunication giants, breweries and other industrial conglomerates, such as ‘Talent Hunt’, ‘Star Quest’, and ‘Project Fame’ in Nigeria. It is pertinent to note that most of the musical activities going on in these groups are based on the achievements of a musical artiste through his or her actual performance on the stage. It does not show his/her aptitude, that is, the degree to which he/she can succeed if he/she takes a career in music. Only the knowledge of musical aptitude can reveal such, the need to document the association between musical aptitude and musical ability in Nigeria is essential to this study. Ten secondary schools were selected through a stratified random sampling
procedure from five education districts. The study also proposed a sample of sixty participants for each of the selected schools. Musical aptitude and musical ability of the selected students were measured using scales adapted from Herbert Wing. A Chi-square test was done to test the relationship between their musical aptitude and musical ability. The implication of the findings is that knowledge of students’ musical aptitude would assist in the selection of musical materials, their content and teaching strategies appropriate for each student.

**Keyword:** Music, Aptitude, Career, Music Education.

15/ART/03

**THE EVOLVING CULTURE OF IGBO POPULAR MUSIC IN NIGERIA FROM 1940 TILL DATE: A HISTORICAL ANALYSIS**

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Popular music in Nigeria is kindled with high spirit of cultural awakening and representation by different ethnic groups in their various musical practices. This paper therefore takes a critical look at the evolution of the musical culture in the contemporary Igbo popular music in Nigeria from the pre-independence era (1940) to the modern era (2000). Coming from a historical perspective, this paper however adopts the ethnography method of gathering relevant data for evaluation and analysis. The outcome of the analysis thus reveals that the music element of the culture is the most evolved among other elements like the ‘industry’ and the ‘audience/ consumer’. The independence/ post independence era (1960-2000) was observed to have witnessed the highest level of creativity and ingenuity in music production, performance and marketing. On the other hand, the modern era (2000 till date) was adjudged to have witnessed high level of technological influx into the music industry, in spite of that, lack of creativity and requisite standard in music creation and performance by the supposedly younger musicians was observed. The activities of music producers, promoters and corporate organisations in advancing popular music in Nigeria dominated the better part of the modern era. It is however recommended that this paper (which is like a historical document) should be archived in Cultural centres/ institutions in Nigeria for easy asses and reference purposes to researchers and academia at large.

**Keywords:** Culture, Evolution, Popular music, Historical, Era.

15/ART/04

**EPISTEMOLOGICAL ELITISM AND THE BOKO HARAM MENACE: TOWARDS A KNOWLEDGE-BASED STRATEGY FOR NATIONAL TRANSFORMATION**

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The contemporary Nigerian society is characterised by violent conflicts emanating from ethnicity and religion, most especially in the Northern states of the country. Widespread
violence and attacks have resulted is a high level of insecurity and uncertainty that has continued to threaten the continued existence of Nigeria as a polity. The recurring violent attacks have become a major phenomenon in day to day socio-political discourse in Nigeria. Many scholars opined that, the major causes of the upheaval is a result of continued government neglect to address key issues at the point of incubation, as well lack of good governance. This work argues the position that the foundation of the Boko Haram insurgency can be found in the view that some people in the society can decide for others to perpetuate violence or propel others to violent acts based on the false belief that they know better than the others: Epistemological Elitism.

**Keywords:** Epistemology, Boko Haram, Terrorism, Epistemological Elitism, Religion.

15/ART/05

**REASON AS A BACKGROUND FOR NATIONAL TRANSFORMATION” LESSONS FROM HEGEL’S METAPHYSICS**

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Following the death of Kant and the illustrious career he left behind, the vacuum left made for a challenge in Germany, that is, who to complete or replace Kant’s system? In other words, who was to be Kant’s successor? This challenge was taken up by a line of thinkers who came to be known as German (Absolute) Idealists, among them Johann Gottlieb Fichte, Friedrich Wilhelm Joseph von Schelling, and George Wilhelm Friedrich Hegel. The last to be mentioned, i.e. Hegel, being a philosopher whose work flowered both as an effort in the completion of Kant’s metaphysical and epistemological system, as well as fully distinct metaphysical system in its own right, occupies our discussion in this paper. An examination of Hegel’s thought leads through a path of understanding the entirety of reality, the cosmos, history and nature all through the instrument of Reason. In this sense, rationalism is hoisted in Hegel’s system as the cornerstone upon which the whole structure of reality could be grounded and comprehended. The real is the rational as Hegel maintains, and he does so in a manner that elevates all reality to the plane, not just of an individual mind, but of absolute consciousness, implying, in other words, that reality is the expression of infinite or absolute thought or consciousness, an attitude that could be described as Transcendental Idealism. Using the instrument of Reason, Hegel develops the dialectic with which grades of syntheses are ascended up until the apex is reached, which is the synthesis of “Idea” and “Nature” in “Spirit” or “The Absolute Idea”, which alone is being and all truth. In Hegelianism thus, a vision of the history of the universe and the history of human consciousness as a necessary unfolding of infinite reason is outlined, and in such a picture that leads metaphysics and epistemology to dizzying heights. The background of Hegel’s development of this speculative system, the contents of this idea, the role and force of Reason within it, as well as the impact of Hegelian metaphysics upon the entire sphere of subsequent metaphysics shall all form our concerns within this paper.

**Keywords:** Rationalism, Absolute Idealism, Transcendental Idealism, History, Infinite,
EXISTENTIAL INTERROGATION OF MAX WEBER’S CULTURAL DETERMINISM AND ITS IMPLICATION ON AFRICA’S DEVELOPMENT

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Culture is a critical factor in the development of a people; it is without doubt the foundation upon which a formidable socio-economic structure necessary for development can be built. However, since the time of Weber, culture took a deterministic nomenclature, by asserting that a given set of cultural factors will give rise to a given pattern of socio-economic life. Thus, in Weber’s and other cultural determinists view, certain ‘traditional cultures’ in most Third World Countries are negative and as such contributed to economic backwardness and poverty. This work rejects this view and argues for cultural possibilism in the existential tradition. We submit that culture is not static but rather dynamic through man’s existential powers, who has the ability to recreate or reconstitute the world as he deems fit.

Keyword: Existentialism, culture, determinism, possibilism, Development.

UNDERSTANDING THE BIOLOGISATION OF ETHICS THROUGH EVOLUTIONARY ETHICS

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With the growing success and impact of the natural sciences in the explanation of phenomena and in the workings of many spheres of human life, there has been increasing advocacy for the adoption of the scientific method in attending to many of the age-old problems that have puzzled and pre-occupied philosophy and philosophers. This has been witnessed in the demands, for example, to naturalise metaphysics and epistemology, and in the same vein, acknowledging the revolutionary breakthroughs in the biological sciences, has there also gone the call for the biologisation of ethics. With roots in the works of Charles Darwin and taking a more modern take-off with E.O. Wilson’s call for scientists and humanists to take ethics temporarily off the domain of philosophers and biologised, the challenge therefore had become for evolutionary biologists and other scientifically-minded ethicists to define goodness with reference to ethical theory and then explain why human beings ought to be good. In this paper, we trace this movement from its source in Darwin’s The Descent of Man, to the growth of evolutionary ethics in a build-up to understanding the backdrop against which the emergence of sociobiology as a field was set. Sociobiology was to provide the podium from which E.O. Wilson made his call, and with decades to follow which witnessed great achievements in the field of biology, or the New Biology, as it came to be known, the crusade for morality to be approached from biological basics only gained more impetus. We review these developments in this work, take note of several criticisms against this approach like Hume’s “Is-Ought problem” and the naturalistic fallacy, analyse how much these criticisms served in containing biologised ethics, and draw up some conclusions for the discussion with an examination of recent efforts by Sam Harris to revive approaches on how science can determine human values.

Keywords: Biologisation of Ethics, Evolutionary Ethics.
SCULPTURAL HORTICULTURE IN CONTEMPORARY ENVIRONMENTAL DESIGN: A PERCEIVED STRATEGY FOR NATIONAL TRANSFORMATION

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Sculptural horticulture is an horticultural practice of training live perennial plants by clipping the foliage and twigs of trees, growing grasses, vines, plants, shrubs and sub shrubs to develop and maintain clearly defined shapes. This research investigates sculptural horticulture in contemporary environmental design, a perceived strategy for national transformation. A multifaceted methodological approach was engaged in investigating the visual property and the underlining environmental significance of sculptural horticulture in Lagos environ. Library research, interview, participant observation and visual documentation were all put to use in this research. Published materials in form of books, magazines, posters, articles in journals as well as catalogues of exhibition were sourced. Unpublished thesis, seminar and conference papers were also consulted. Interview as a method was employed to bring the researcher into personal interaction with the horticulturist and sculptors. Selected topiary and sculptural horticulture were analysed and related to the sustenance of the environment. It was discovered that most of the horticultural design in Lagos Nigeria were limited to planted foliage which were used for gardening and landscaping. It was further discovered that, in an attempt to create a three dimensional horticulture, geometric shapes and the hybrid of metal and plant were created instead of reinforcing the work with armature. It was recommended that there should be a multidisciplinary approach to horticultural design towards achieving the integration of sculptural technicalities for a sustainable environment and national transformation.

Keywords: Sculpture, Horticulture, Environmental Design, Strategy, National Transformation.

CLIMATE CHANGE AND ENVIRONMENTAL DEGRADATION: AN ECO-LINGUISTIC STUDY OF PRINT MEDIA REPORTS ON OIL EXPLORATION IN THE NIGER DELTA

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The study focuses on environmental issues as reported in the media. The rate of oil exploration in the Niger Delta region has rendered the land barren even though the region is blessed with rich mineral resources, those resources have been exploited to the disadvantage of the people who are predominantly agrarian. The level of oil exploration has left the Niger Delta people with no option of any means of livelihood. These environmental issues have been widely reported in the media. The focus of this study therefore is to critically examine those reports from the perspective of language by applying the theoretical principles of Eco-Critical Discourse Analysis to explicate the discourses raised. We apply Eco-Critical Discourse Analysis as a theoretical model in this study because it deals with the
application of Critical Discourse Analysis to texts about the environment and environmentalism, in order to reveal hidden assumptions and hidden messages and comment on their effectiveness in achieving environmental aims. The model implies intervention by providing resources for those who may be disadvantaged by exposing the hidden things, since they are not evident for the individuals involved and because of this, they cannot be fought against. Critical Discourse Analysis reveals how texts are constructed so that particular and ‘Potentially indoctrinating’ perspectives can be expressed.

**Keywords:** Environmental Issues, Climate Change Niger Delta, Oil exploration, print Media Reports, Eco-Linguistics, CDA.

15/ART/10

**INFLUENCE OF RURAL-URBAN MIGRATION ON THE HEALTH AND NUTRITIONAL STATUS OF OLDER PERSONS IN RURAL AREAS, IMO STATE, NIGERIA**

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Increase in rural-urban migration and simultaneous growth in the population of older persons living in the rural areas are part of the demographic changes being experienced in most developing countries. Consequently, there may be decrease in the general welfare of older persons who are left behind. This paper investigates the effect of migration on various dimensions of elderly health and nutrition using data from selected rural areas of Imo State, which has one of the highest rates of rural-urban migration in Nigeria. Descriptive research (survey) design was adopted. Four hundred older persons aged seventy and above was selected using the multi-stage sampling procedure. Questionnaire and in-depth interview were used for data collection. Data collected were analysed using descriptive statistics. The study found positive influence of migration on health and nutrition of older persons in the rural areas. These positive outcomes were traced to remittances from family members living in the cities which led to improvements in health and diet of older persons. Based on the findings, it was recommended that, rural-urban migrants be more involved in providing healthcare facilities in rural areas; there should be more interventions from government and other stakeholders for the improvement of health and nutritional status of older persons in rural areas.

**Keywords:** Rural Areas, Migration, Social Amenities, Rural-Urban Linkages, Successful Ageing
15/ARTE/11

CAN VALUE FOR LIFE MOTIVATE ACTION AGAINST BIOTECHNOLOGY-BASED AGRICULTURE AND GM FOODS?

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“The world will little note, nor long remember what we say here, but it can never forget what they did here”. This statement by Mr. Abraham Lincoln (Gettysburg Address, Nov 19, 1863), applies to the permissive and general application of genetic engineering (also biotechnology) to agriculture and medicine in Nigeria in the sense that past presidents, governors, legislators, ministers for agriculture and rural development, health, and science and technology did not act on any of the letters that I wrote them—with supporting evidences—about the practice and the effects of the consumption of its products. It also applies in the sense that the rest Nigerians have also not taken seriously the things that I have been writing about the practice and the effects of consuming its products. The statement applies in the third sense that when the governments and Nigerians realise that I have been saying and writing the truth, solid and liquid GM foods would be everywhere, the rate of diseases and death due to ingesting them would be phenomenal and irreversible. Therefore Nigerians can never forget what biotechnology companies did in Nigeria.

In this paper I report the use of banners, dialogue and emphasis on value for life to inform and educate Nigerians on the issues in agriculture based on genetic RE-engineering or biotechnology with the belief that these will motivate them to demand the banning of it, the use of GMOs for farming, and the production and importation of GMOs and GM foods. I also report my findings.

Keywords: Agriculture, Biotechnology, GMOs GM foods, Value.

15/ARTE/12

UTILISATION OF PLAY-THERAPY ON SOME PSYCHOLOGICAL PROBLEMS OF CHILDREN OF BEGGARS IN DESTITUTE CENTERS: A CASE OF IMO STATE DESTITUTE CENTER, NIGERIA

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The study investigated the utilisation of play-therapy method in solving some psychological problems of children in Destitute Center in Imo State of Nigeria. The study was hinged on the risk of begging in Nigeria society which has created a large hole in the life of children belonging to these beggars. The study was restricted to destitute center in Imo State for proper control of the study. The children of beggars are faced with some psychological problems such as anxiety, depression and obsessive behaviours to mention few. This study adopted three research questions and three hypotheses. The design of the study was quasi-experimental design which has pre/post test control group design. Multi-stage sampling
techniques were used to select 50 participants consisting of 28 female and 22 male. The Intervention was Play-Therapy method used for experimental group. The instruments for the study were Goldberg Depression Inventory by Goldberg (1993) and Beck Anxiety Inventory by Beck (1980). The statistically tool used was Covariance (ANCOVA) at 0.05 level of significance. The result showed that play-therapy methods significantly reduced the level of anxiety and depression of children of beggars in destitute center in Imo State. The results of this study were situated within the existing body of knowledge and some germane recommendations were made based on the findings.

*Keywords:* Anxiety, Obsessive-Compulsive behaviour, Play Therapy.

15/ARTE/13

**VISUAL ART APPRECIATION OF NIGERIA:**
**THE ZARIA ART SOCIETY EXPERIENCE**

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This paper focuses on the Modern Nigeria art and its gradual but steady growth since the establishment of the first higher institution in Nigeria (1955) by the colonial government to award a Diploma certificate in art (Nigerian College of Arts, Science and Technology). As shown in the paper, of the historic trends of transformation of Nigerian traditional art that was started by Ben Enwonwu and popularised by the Zaria Art Society Members. The growth of Nigerian modern art and the philosophy of the Zaria Art Society have continued to expand even many years after the closure of the Society. This paper also discourses the extension of the philosophy of the Zaria Art Society into the Church by one of its member, (Bruce Onobrakpeya) who represented most of his Christian images in traditional Urhobo style as against the popular western style. The paper exposes that Nigeria has a rich art and diverse culture which existed long before the colonial reign and thus encourages the efforts of the Zaria Art Society in recalling and using Nigerian traditional forms and motifs in their modern art by way of synthesis.

*Keywords:* Art, Traditional, Philosophy, Historic, Synthesis.

15/ARTE/14

**MAXIMISING DIGITAL ADVERTISING FOR EFFECTIVE NATIONAL DEVELOPMENT**

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Advertising has taken a new form with the digitalisation of the world and companies, nations and individuals are making a good use of it. This can be seen in the in the gradual movement from analogue technologies to the digital technologies in almost all sectors of the
country. The new media has metamorphosed the use of advertising to becoming a more purposeful element in the International Marketing Communications. This is because with the new media advertising has become more accessible, ubiquitous and very handy and can be easily manipulated to one’s use as a consumer. This has further empowered the consumers towards becoming the creators of information while having a variety of information to choose from. The new media has also help advertisers to create awareness for their goods at low costs on investments. This has in turn improved the gross national product of the nation and it is further leading to greater presence in the global world.

However, this paper avers that the new media is in its growing state in Nigeria but with the availability of adequate power supply, bridging of the digital divide between the urban and the rural dwellers in Nigeria, there is also the need to build a viable and all-encompassing broadband infrastructure round the country. With this and many more, advertising will be maximally utilised for national transformation.

**Keywords:** Advertising, New Media, National Development, Consumers and Advertisers.

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**THE VIRTUAL SPHERE AS DISCURSIVE SPACE: EXPLORING ASPECTS OF DIGITAL HUMANITIES**

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In the last couple of years, Web2.0 has evolved as an emerging space for multimodal discursive practices. Apart from the Internet, Social Media Networks such as Facebook and Twitter have made web users both consumers and producers of online contents. This development has led to a growing interest in the study of digital media communication believed to be at the intersection of computer science and linguistics.

This study thus considers this new perspective as a critical sub-discipline in digital humanities by exploring how the Internet is increasingly becoming a tool for socio-political activities in Nigeria. It adopts both qualitative and quantitative approaches with the aid of some computer applications and insights from Susan Herring’s (2004) Computer-Mediated Discourse Analysis (CMDA).

The basic methodology involves monitoring and downloading relevant text from the webpages and social media networks of key political actors and stakeholders. The data is part of a larger corpus named Corpus of Nigeria New Media Discourse in English (CONNMEDE). The corpus thus consists of web-based data harvested online and analysed with the aid of internet-based computer applications and corpus analytical tools such as SketchEngine, Topsy and AntCorc3.4. Additional corpus was also extracted from Global Web-Based English (GloWbE). The study suggests that the widespread use of the Internet in Nigeria for political and allied purposes holds some prospect for the development of a strong and sustainable democracy. The future may also witness the emergence of more digital media applications that may in turn continue to exert more pressure on the communication process and discursive practices in Nigeria.

**Keywords:** Digital humanities, New media, Discourse, Corpus
TOPIC: TRANSFORMING THE NIGERIAN ECONOMY INTO A WORLD CLASS ECONOMY THROUGH LANGUAGE AND INTER-CULTURAL UNDERSTANDING

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In order to function effectively in the international economy of the 21st century, Nigeria needs language education. In this age of globalisation, international relations on the platforms of economy, diplomacy, science and technology, depend a lot on communication competence in languages. Information and communication make the role of language in economic transformation of a country vital.

Language education will help in promoting Nigerian economic growth to a world class standard. Peace and prosperity go together and the quest for peace and prosperity can always be a country’s concern as no nation can be transformed economically when her people are at war with each other. The insecurity in the country and the corruption observed in the public and private sector of the economy has been attributed to the absence of values education. This paper justifies the role of language education in intercultural understanding by enhancing bilateral trade and international relations that promote economic transformation. It further suggests a review of the language curriculum and its implementation strategies for policies relating to intercultural understanding, growth and sustainability. It also suggests that French and Nigerian languages be made compulsory at the senior secondary school for better cross cultural diversification and competence.

Keywords: culture, language, curriculum, economic sustainability.

CONTEMPORARY LINGUISTIC RESEARCH AND NATIONAL TRANSFORMATION: AN APPRAISAL OF THE PRAGMA-CRAFTING THEORY

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In all countries of the world, language is an instrument of reform; it transforms society in diverse ways and in various facets. This paper engages the roles of language in national development which is not something any country wishes to ignore, particularly in this age of globalisation, technological development, scientific breakthrough and challenges in the areas of insecurity, economic recession, outbreak of epidemics and a host of other predicaments. The paper is not a textual analysis of discourse using the Pragma-crafting Theory. Rather, it investigates how notions in the theory can be instrumental to national transformation or progress across certain facets of national life. A reactionary product of the Pragmatic Act Theory by Jacob Mey, the Pragma-crafting Theory is a very recent theoretical framework for the analysis of discourses across genres. Therefore, it is suitable for the elucidation of the functional potency of language in societal transformation. This study finds out conclusively, that language takes goal-driven dimensions as it informs, persuades and mobilises society towards a common goal.

Keywords: Jacob Mey, the Pragma-crafting Theory, linguistic theory, nation-building.
HEAD WITHOUT HEART; APPRAISING ALTINE’S WRATH AND HANDS THAT CRUSH STONES
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Deprived women are the victim of circumstances perpetrated by egocentric men left at the mercy of a patriarchal order. In pursuit of a phallo-centric propagation which leaves women at the receiving end, dramatic literature and the theatre postulates a stance antithetical to the woman’s wellbeing. Such ill-conceived portrayal that reiterates and berates woman as being perpetually helpless results in the damage of the female psyche and leaves them conditioned detrimentally at the man’s expense. Using the case study approach, this study asserts that portrayal of women in their helpless state makes matters worse for the coping gender as Osofisan’s Altine’s Wrath and Eze-igbo’s Hands that Crush Stones posit.

*Keyword:* Head, Heart, Wrath and Hands That Crush Stones

A PHONO-SYNTACTIC APPROACH TO ERRORS IN YORÚBÁ PLACE NAMES
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The phenomenon of naming places, world over, is not completely akin to the process of naming people. There are some distinctive situations that distinguish place names from the usual naming of a child at birth. Spontaneous events could be seen as one of the various ways through which places are named. Just as the use of vowels and consonants is vital to the process of naming places, the use of tones should also be considered as one of the variables involved in naming places in Yorubaland. Yorubá is a tonal language. It exhibits three contrastive (phonemic) tones. They are high [´], mid (usually unmarked in the orthography) and low [´]. The misuse of these tones has been seen as one of the reasons for the change in meaning of not only personal names but also place names. Over the years, there have been various shift in the pronunciation of place names, ranging from phonological to syntactic implications in their internal structure. The aim of this study therefore, is to employ the phono-syntactic approach, coupled with etymological account of some selected Yoruba place names to correct the errors associated with the pronunciation and meaning of these place names. It is our belief that this study will underpin the essence of tonal representation as well as other phonological processes as well as syntactic analysis in Yorubá lexemes in general and in Yorubá place names in particular.

*Keywords:* Phono-syntactic, Errors, Place names, Tones, Internal Structure.
15/BMS/01

ESTIMATING MALE AND FEMALE URETERAL LENGTH WITH MATHEMATICAL MODELS: CADAVERIC STUDY

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Background: Prior determination of ureteral length helps in pre operation planning for urological surgery as an opportunity to choose or select appropriate length of catheter. With increase in the use of ureteric stents as a result of obstruction of the ureter, using mathematical equation and anthropometric measurement of patient will by-pass normal use of x-ray to evaluate ureteral length when considering the length of the stent. The models will predict appropriate length of ureter and also reduce cost, time spending and give conveniences and comfort to the patients.

Objective: This study is to generate mathematical models each to estimate human ureteral length to avoid risk of using too long stent and x-ray radiation.

Materials and Method: Seven adult male cadavers were dissected as experimental subjects. From each subject, we measured the two ureters and the following eight anthropometric dimensions: supra orbital notch to medial malleolus; acromion to lateral malleolus; anterior superior iliac spine to lateral malleolus; waist circumference; inter anterio superior iliac spine distance; pubic symphysis to medial malleolus; first lumbar vertebra to tip of coccyx and inter acromion length. The statistical analysis includes mean, correlation coefficient, regression and simulation.

Results: There was high correlation coefficient between ureteral length (y) and four out of the considered eight anthropometric measurements: Supra orbital notch to medial malleolus \( \tau = 0.954 \); waist circumference \( r = 0.914 \); Anterior – super iliac spine to lateral malleolus \( r = 0.887 \); acromion to lateral malleolus \( r = 0.796 \).

Conclusion: The study generated four mathematical models each to predict ureteral length of patient at a time for both sexes. The models can serve as point of care testing (POCT) to select proper length of ureteric stents in urological management for patients.

Key words: Ureteral stent, Anthropometric measurement and Mathematical model

15/BMS/02

ANTIMALARIA ACTIVITY OF AQUEOUS CHINESE HERBAL GREEN TEA EXTRACTS (GB/TI9598, BIA849, TD570) ON PLASMODIUM BERGHEI NK-65 INFECTED MICE

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Background: Malaria is the most important parasitic disease in the tropics and despite concerted effort globally for its eradication, it remains a potent health challenge.
Aim: *In vivo* antiplasmodial activity of the aqueous extract of Chinese green tea in mice infected with chloroquine-sensitive *Plasmodium berghei* was evaluated (4-day suppressive and Rane’s curative assay).

One hundred and forty four (144) mice weighing (18-25 g) were divided randomly into nine groups of sixteen mice each. Biochemical and parasitological assays were done. Tea extracts produced significant (p< 0.05) dose dependent reduction in the parasitaemia level comparable to reduction in the chloroquine treated group. The percentage curative activity of chloroquine at 5mg/kg b.wt. was comparable to reduction by 200mg/kg b.wt. of BIA849, 200mg/kg b.wt. of TD570 and 400mg/kg b.wt. of GB/T9598 for the 3 days post-treatment. There was a significant increase of WBC, RBC, Hb and MCV while the untreated negative control showed reduction in haematological parameters: WBC (5.15±0.12 to 3.66±0.22); RBC (7.46±0.98 to 4.18±0.04); Hb (14.18±1.08 to 10.99±0.43) against stimulatory effect of 400mg/kg b.wt. of GB/T9598 extract WBC( 5.56±0.01 to 6.86±0.01); RBC (7.47±0.01 to 6.06±0.04); Hb( 12.52±1.02 to 14.26±0.45); MCV(43.16±3.50 to 44.98±2.60). Haematopoiesis peaked (during the curative treatment) in the group administered 200mg/kg BIA849 (4.34±0.01 to 6.04±0.01 X10^9/L), WBC (6.86±0.12 to 6.06±0.01 X10^12/L), RBC (8.48±0.68 to 12.54±1.23g/L) for Hb and (41.76±2.90 to 47.74±1.90) for MCV; 400mg/kg GB/T9598 also showed high haematopoiesis. The tea is good alternative natural antimalarial drug.

**Keywords:** Malaria, Chinese, Tea, Haematopoiesis, Suppressive, Curative

15/BMS/03

**EVALUATION OF THE PHYTOCHEMICAL CONSTITUENTS, MINERAL CONSTITUENTS, AND ANTIOXIDANT ACTIVITY OF THE ETHANOLIC EXTRACT OF BAPHIA NITIDA**

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*Baphia nitida* (camwood) is a widely distributed plant most commonly found in the interior and coastal regions of tropical Africa. Known by diverse local names across Africa, extracts from its stem, leaves and roots have been found to possess several medicinal values. This study was designed to investigate the phytochemical constituents, mineral elements composition and antioxidant properties of the ethanolic extract of *baphia nitida* leaves responsible for its medicinal values. *Baphia nitida* leaves were purchased at Mushin market in Lagos. It was identified at the herbarium unit, Botany department, University of Lagos with herbarium number: LUH 5614. The ethanolic extract was screened for the presence of phytochemicals while antioxidant assays (DPPH scavenging activity and reducing power assay) was carried out while the mineral content was determined using atomic absorption spectroscopy (AAS). The catechin was detected and quantified using the high performance liquid chromatography analytical machine.

Phytochemical screening of the extract revealed the presence of tannins, saponins, steroids, reducing sugar, glycosides, phlobotannins, terpenoids, flavonoids and alkaloids. There was high reducing power and it inhibited 2, 2-diphenyl-1-picrylhydrazyl (DPPH), indicating its antioxidant activity. Minerals detected include calcium, potassium, sodium, copper, iron,
manganese, magnesium, zinc and cobalt. These were in varying concentrations with iron having the highest concentration and cobalt the lowest. HPLC analysis revealed the presence of catechins. The analysis shows that *Baphia nitida* is a promising herbal remedy with strong anti oxidant property.

**Keywords**: *Baphia nitida*; 2, 2-diphenyl-1-picrylhydrazyl; atomic; absorption; spectroscopy

15/BMS/04

**AN EVALUATION OF THE ANALGESIC ACTION OF AQUEOUS LEAVES EXTRACT OF *HYBANTHUS ENNEASPERMUS* LINN. F. MUELL [VIOLACEAE]**

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*Hybanthus enneaspermus* is a tropical and subtropical shrub used to manage conditions involving inflammation and pain. This study was carried out to evaluate the analgesic activity of aqueous leaves extract of *H. enneaspermus* (ALHE).

The analgesic activity of ALHE (50, 100 and 200 mg/kg) was investigated using acetic acid- and acetylcholine-induced mouse writhing tests, formalin-induced pain and tail clip tests in mice. Naloxone, glibenclamide or pilocarpine was administered to some animals 30 minutes before ALHE prior to induction of pain. Possible contribution of central nervous system (CNS) activity of the extract to its analgesic action was also evaluated using open field and hexobarbitone-induced sleep tests.

The extract (50-200 mg/kg) significantly inhibited writhing in the acetic acid- and acetylcholine-induced mouse writhing tests. It was most effective at 100 mg/kg, producing 97.6% and 96.5% inhibition in both tests respectively. Naloxone, glibenclamide and pilocarpine significantly (p<0.001) altered this analgesic effect of the extract. The extract also significantly (p<0.001) increased pain threshold in tail clip test and significantly reduced reaction time in both phases of the formalin-induced pain test. The extract significantly reduced locomotive and exploratory activities of mice in the open field test but did not produce any significant effect in the hexobarbitone-induced sleep test in mice. These findings show that the aqueous leaves extract of *Hybanthus enneaspermus* possesses analgesic activity, which is mediated by mechanisms likened to those of opioid receptor antagonists, muscarinic receptor antagonists, and K+ channels opening.

**Keywords**: *Hybanthus enneaspermus*, analgesic, acetic acid, acetylcholine
ESTIMATION OF STANDARD KIDNEY VOLUME IN ADULT NIGERIAN POPULATION: USING 3D RECONSTRUCTION OF ABDOMINAL MULTI DETECTOR COMPUTER TOMOGRAPHY (MDCT) SCAN IMAGES

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The kidney volume is an indicator of its size which depends on the length, breath and thickness. It can therefore be useful as quantitative indices of value for renal management decisions.

This study is to evaluate the kidney volume, length, breath and thickness among adult Nigerians using MDCT.

Abdominal MDCT scan images of 301 patients (male 181 female 120) age (20-65yrs) was retrospectively reviewed. The data processing include extrapolating 3D dimension from computer tomography and measuring the maximum length, breadth and thickness of each kidney image. Using clinical prolate ellipsoid formula ((kidney index) as kidney volume. Statistics including: mean, mode, median correlation coefficient and t-test.

The kidney volume for male (157.90 cm$^3$) is larger than female volume (156.60 cm$^3$). The left kidney volume 165.70cm$^3$ is larger than right (149.40 cm$^3$). The left kidney length (9.96 cm) is longer than the right length (9.86 cm). Correlation coefficient between the left kidney volume and left kidney; length (r = 0.288); breadth (r = 0.565); thickness (r =0.719) while Correlation coefficient between the right kidney volume and right kidney; length (r =0.286); breadth (r =0.554) and thickness (r = 0.770).

Kidney volume, length, breath and thickness for adult Nigerian were established in this study using MDCT as against previous study estimating kidney length using ultrasound in Eastern Nigeria. These baseline values can be used to select appropriate kidney donor and appropriate recipient kidney; it will also be useful to monitor transplanted kidney in routine follow up in recipient patient.

Keywords: Kidney volume, Prolate Ellipsoid formula and MDCT

GREEN COCONUT (COCOS NUCIFERA) WATER EFFECT ON OESTROGEN RECEPTOR ACTIVITIES IN THE PITUITARY GLAND OF HYPERPROLACTIN FEMALE SPRAGUE-DAWLEY RATS

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High serum prolactin is essentially associated with chronic anovulation which is a major implication in female infertility. Prolactin interference with gonadotropin-releasing hormone leads to poor follicular development hence reduction in granulosa cell oestradiol production. Functionally, oestrogenic actions in tissues are mediated at receptor sites.

The objective of this study is to determine the effect of green coconut water on oestrogen receptor activity in the pituitary gland of hyperprolactin female Sprague-Dawley rats.
A total of one hundred and thirty-five cyclic female Sprague-Dawley rats weighing 145-170 g were used for this study. The animals were randomly divided into six experimental study groups. In group A, a dose of metoclopramide hydrochloride (MCH) at 0.2 mg/100 g body weight was administered daily for 28 days to experimentally induce hyperprolactineamia and this administration was withdrawn for 8, 16 and 28 days. The animals in group B initially received MCH followed by the administration of 5 ml/100 g. b. w. and 10 ml/100 g. b. w. of green coconut water (GCW) for 8, 16 and 28 days respectively. In group C, animals were concurrently treated with MCH and GCW at 5 ml/100 g. b. w. and 10 ml/100 g. b. w. for 28 days. In group D, animals were pre-treated with 5 ml/100 g. b. w. and 10 ml/100 g. b. w. of GCW for 8, 16 and 28 days respectively followed by the administration of MCH. In group E, animals were treated with GCW only at 5 ml/100 g. b. w. and 10 ml/100 g. b. w. for 8, 16 and 28 days respectively and group F received distilled water only.

The result showed that green coconut water causes high and extensive expression of oestrogen antigen-antibody complexes in the pituitary tissues. Findings of the present study indicate that GCW activates oestrogen receptors.

**Keywords:** Pituitary gland, Green coconut water, Oestrogen receptors, Hyperprolactinaemia

15/BMSE/07

**HOW SAFE ARE THE ALCOHOLIC DRINKS WE CONSUME?**

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Alcohol consumption is readily acceptable worldwide with little or no concern for its adverse side effects. This study looked at the effect of different alcoholic beverages consumed in this part of our world on Wistar rats to ascertain their level of safety. 35 male Wistar rats (80.64± 2.77g) divided into 7 groups of 5 rats each; the animals were administered through gavage means, alcoholic beverages and pure alcohol to represent concentrations of 5, 15 and 40% respectively for 28 days. Physical parameters feed, water and weight were determined daily and also the activities of alanine transaminase (ALT), aspartate transaminase (AST) and γ glutamyl transaminase (GGT), selected organs were harvested and fixed in 10% formalin for histological evaluations, and also the GC-MS profile of the respective beverages. Physical parameters weight and water intake were statistically significant while activity of ALT was not statistically significant across all groups when compared with controls, while GGT and AST activities were significant with P≤0.05. Photomicrographs showed degrees of damage ranging from lungs>liver>kidney>brain. The GC-MS profile gave the following: beer 19, red wine 10 and spirit 16 constituents. The enzyme activities did not indicate adverse effects on the body system as values though significant were within normal ranges. The photomicrographs however, showed some degree of organ damage implying that such beverages should be consumed with caution while the GC-MS analysis showed that a particular brand should be adhered to as different brands denotes several constituents which could portray danger to the body systems in future.

**Keywords:** Alcoholic beverages, ALT, AST, GGT, histology GC-MS.
DYSLIPIDEMIA PROFILE OF TYPE II DIABETIC OUTPATIENTS IN ILARO, OGUN STATE, NIGERIA

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Dyslipidemia is a common feature of diabetic patients, and this condition is a risk factor for the development of cardiovascular diseases. The typical dyslipidemia characteristics of diabetic patients are hypercholesterolemia, hypertriglyceridemia, increased LDL-cholesterol and reduced HDL-cholesterol. This work studied dyslipidemia patterns in diabetic patients undergoing pharmacological and dietary treatment. Diabetic patients attending the Diabetes Clinic in State Hospital, Ilaro were recruited into the study after their informed consent. Both anthropometric and biochemical analysis was conducted. Results obtained indicate that both the diabetic normotensive (DBN) and diabetic hypertensive (DBH) patients had significantly reduced ($p<0.05$) concentration of plasma phospholipids and significantly increased ($p<0.05$) concentration of plasma glucose and HDL-triglyceride compared to the control subjects. There were fluctuations in the concentrations of HDL-cholesterol, LDL-cholesterol and total cholesterol concentration of the diabetic patients, though not significantly different ($p<0.05$), compared with the control subjects. This study suggests that dyslipidemia occurred in these diabetic patients consequent upon complications from diabetes mellitus.

Keywords: Dyslipidaemia, HDL-triglycerides, phospholipids, hypercholesterolemia, diabetes, LDL-cholesterol.

HEAVY METALS IN COSMETICS: ASSESSMENT AND TOXICOLOGICAL EFFECT OF LEAD, CADMIUM AND CHROMIUM OF SOME FEMALE COSMETIC USERS IN A TERTIARY INSTITUTION IN LAGOS, NIGERIA

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Background: Cosmetics have come to stay as part of products we use on a daily basis. With its usage also comes the undesirable threat of effects of heavy metals, which may be present in these products in levels exceeding the permissible.

Objective: In this study, we assessed the levels of toxic metals, enzymatic antioxidants levels from the effect of the toxic metals and the levels of the liver enzyme functions from the application of different cosmetic products used by our respondents.

Method: Blood samples were collected from each participating respondent and they were grouped into mild, moderate and heavy users after which the samples were analysed according to standards.

Result: The results of the hepapathological assay showed that ALP enzyme level ($124.91 \pm 45.00$) U/L while ALT and AST had a level of ($21.53 \pm 5.603$), ($12.63 \pm 6.130$) U/L respectively. The heavy metals analysed in this study include Lead, Chromium and
Cadmium. The mean and standard deviation of these metals are: Lead having the highest concentration (0.25± 0.296), Cadmium registering non acceptable values and Chromium with (0.13 ± 0.170) ppm. Antioxidant enzymes analysed showed no significant difference (p<0.05) between group of respondents. **Conclusion:** This study shows a possible route in accumulation of heavy metals that can reach toxic levels, which can lead to physiological problems in cosmetic users. **Keywords:** Cosmetics, Heavy metals, Liver enzymes, Antioxidant enzymes

**URINARY 1- HYDROXYPYRENE CONCENTRATION AND TOXICITY BIOMARKERS IN ACTIVE AND PASSIVE SMOKERS FROM LAGOS METROPOLIS, NIGERIA**

Tobacco smoking is one of the most common addictions of modern times and is a major source of human exposure to polycyclic aromatic hydrocarbons. There are growing concerns on the toxicological effects of components of tobacco smoke in passive smokers who directly do not smoke tobacco but spend considerable time in smoke polluted environment. This study investigated the association between urinary 1-hydroxypyrene concentration and liver and kidney function biomarkers as well as antioxidant status in tobacco smokers and non-smokers from Lagos Metropolis, Nigeria. Eighty adult males (Active, Passive and Non-smokers) were recruited in this study and given a standardised questionnaire. A 24-hr urine samples were collected and used to assay for urinary 1-hydroxypyrene concentration while blood samples were used to determine haematological, albumin, total bilirubin (TB), aspartate aminotransferase (AST), alanine aminotransferase (ALT), total protein (TP), alkaline phosphatase (ALP), creatinine, superoxide dismutase (SOD), catalase (CAT), reduced glutathione reductase (GST) and malondialdehyde (MDA) parameters. Urinary 1-hydroxypyrene level of Active and Passive smokers were not significantly (p>0.05) different but were significantly (p>0.05) higher than non-smokers. ALT, AST and TB of non-smokers were significantly (p>0.05) lower than that of Passive and Active smokers while plasma creatinine of passive and active smokers were significant (p<0.05) higher compared to non-smokers. There was also significant (p<0.05) decrease in SOD, CAT and GST in passive and active smokers compared to non-smokers whereas there was significant (p<0.05) increase in MDA in passive and active smokers compared to non-smokers. Our findings suggest that both active and passive smokers have higher risk of the adverse health effects than non-smokers. The high levels of urinary 1-hydroxypyrene, liver enzymes and decreased antioxidants in passive smokers are indicators that even though they did not directly smoke but were predisposed to risk of liver and oxidative damage because of spending considerable time in smoke polluted environment. **Keywords:** Tobacco, 1-hydroxypyrene, Liver damage, Antioxidants, Smokers
GENETIC VARIANTS OF PLATELET GLYCOPROTEIN RECEPTORS AND STROKE RISK IN CHILDREN WITH SICKLE CELL ANAEMIA

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Platelets are activated at the sites of tissue damage, adhering to the sub-endothelial collagens via platelet glycoprotein receptors. However, inappropriate platelet activation and adhesion can lead to thrombosis and stroke.

This study investigated the association of platelet glycoprotein Ia (rs1126643) and IIIa (rs5918) polymorphisms with stroke risk in children with sickle cell anaemia (SCA). One hundred and thirty-one children (2-16 years) with SCA were recruited into this study and were screened for stroke risk using non-invasive and non-imaging Trans-cranial Doppler ultrasonography, which measured time-averaged mean of maximum velocities in the middle cerebral and internal carotid arteries of the brain. Fifty-nine age-matched Hb AA children were used as the control group. Amplification refractory mutation system was used for genotyping DNA samples obtained from the study participants.

Homozygosity for GpIa T allele was 9.8% among SCA subjects while none was observed in the control group. The frequency of platelet glycoprotein Ia (GpIa) T allele was higher in SCA subjects compared with the control (28.0% vs. 10.0%), bringing about a significant association between GpIa T allele and SCA subjects with standard stroke risk ($X^2 = 13.43$, OR = 3.94, 95% CI = 1.83-8.46; $p$-value = 0.0002) and high stroke risk ($X^2 = 11.66$, OR = 3.29, 95% CI = 1.62-6.68; $p$-value = 0.0006). However, the frequency of PLA1 and PLA2 alleles in GpIIIa among the SCA subgroups and the control did not show any significant association. The 807T variant of glycoprotein Ia might be an independent risk factor for stroke development in children with SCA in Lagos, Nigeria.

Keywords: Genetic polymorphisms; Platelet glycoprotein receptors; stroke risk; sickle cell anaemia.

PROTECTIVE ROLE OF SPONDIAS MOMBIN LEAVES AND KOLA ACUMINATA SEED EXTRACT AGAINST SCOPOLAMINE-INDUCED MEMORY IMPAIRMENT IN RODENTS

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Dementia is a neuro-degenerative disorder characterised by inexorably progressive deterioration in cognition. Ethnobotanical survey has shown that Spondias mombin when chewed with Kola acuminata seeds have memory enhancing and anti-aging properties. This study sought to investigate the ameliorating effect of hydroethanolic leaf extract of Spondias Mombin (SM) and Kola Acuminata (KA) seeds against scopolamine-induced memory
deficit. In addition, evaluate their effect on scopolamine-induced oxidative and nitrosative stress in the hippocampus, prefrontal cortex and striatal regions of rat brains.

SM (50, 100 and 200mg/kg p.o) or KA (50, 100 and 200 mg/kg, p.o) or tacrine (5 mg/kg, i.p.) were administered to animals for 3 days. Scopolamine (3 mg/kg i.p) was administered 1 h post-treatment on day 3, 5 min later, the Y-maze test (mice) or Morris Water Maze test (MWM) in rats was conducted. One hour post-training on day 5 of MWM, the rats were sacrificed and brains rapidly removed to isolate the prefrontal cortex, hippocampus, and striatum for estimation of nitrate and oxidative stress biomarkers.

Scopolamine induced a significant deficit in the spontaneous alternation behaviour which was reversed by SM [F(5,24)=8.409], KA [F(6,28)=5.103, p=0.0012] or the combination of subeffective doses of SM 50 and KA 50mg/kg [F(6,28)=5.103, p=0.0012]. In the Morris Water Maze test, a session dependent decrease in ELT occurred with SM [F(4,15)=74.31, p=0.0001], KA [F(4,20)=281.9, p=0.0001], and the combination of subeffective doses of SM 50 mg/kg and KA 50 mg/kg [F(4,20)=70.55, p=0.0001] suggesting improvement in spatial learning and memory impairment induced by scopolamine. Also, SM, KA and the combination of subeffective doses of SM 50 mg/kg and KA 50 mg/kg reversed deficit in GSH, catalase and SOD levels induced by scopolamine in the prefrontal cortex, hippocampus and striatum with concomitant attenuation of lipid peroxidation and nitrite levels.

The results obtained from this study affirms that Spondias mombin and Kola acuminate possess memory enhancement properties through reversal of oxidative and nitrosative stress in the prefrontal cortex, hippocampus and striatum. Therefore, Spondias mombin and Kola acuminate are possible therapeutic targets for prevention or management of dementia.

Keywords: Dementia, Kola acuminate, Spondias mombin, Morris water maze test

PROTECTIVE ROLE OF KOLAVIRON, A BIFLAVONOID COMPLEX ISOLATED FROM GARCINIA KOLA AGAINST SCOPOLAMINE-INDUCED MEMORY IMPAIRMENT IN RODENTS

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Dementia is a syndrome usually of a chronic or progressive nature in which there is deterioration in cognitive function (i.e. the ability to process thought) beyond what might be expected from normal ageing.

The present study is designed to investigate the effect of kolaviron isolated from the seed extract of Garcinia kola on memory and learning deficits induced by scopolamine in rodents. Mice used in theY-maze test and rats used in the Morris Water Maze test (MWM), were divided into 6 groups (n=6) and pretreated for 3 days as follows: Group (1-2) vehicle (10ml/kg; p.o), (3-5) kolaviron (25, 50, 100mg/kg; p.o), and (6) tacrine (5mg/kg; i.p). One hour post-treatment on day 3, scopolamine (3 mg/kg; i.p) was administered to animals in groups 2-6. The rats were sacrificed on the 7th day after the MWM test and the hippocampus, striatum and prefrontal cortex were rapidly isolated on ice for biochemical markers of oxidative stress.

Scopolamine induced deficit in percentage alternation behaviour in the Y-maze test, reversed by kolaviron in a dose-dependent manner [F (5, 29) = 14.09 P <
Scopolamine also induced deficit in spatial learning in the MWM test, was reversed by kolaviron \([F (4, 20) = 13.52 \ P<0.0001]\). Scopolamine-induced lipid peroxidation and antioxidant enzyme deficit in the brains of the rats was ameliorated by kolaviron treatment. The findings from this study showed that kolaviron possess anti-amnesic effect through inhibition of acetylcholinesterase or increase in antioxidant system activities.

**Keywords:** Dementia; Acetylcholine; Antioxidant; Biflavonoids; Hippocampus

15/BMS/14

**COMPETENCY OF MALARIA MICROSCOPISTS IN PRIVATE HEALTH FACILITIES IN THREE STATES OF NIGERIA**

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Malaria microscopy is the “gold” standard for malaria diagnosis. As the epidemiology of malaria changes, detection of low parasitaemia, enumeration and the elucidation of Full Blood Count (FBC)/differentials in patients with persistent fever by microscopy is indispensable. The competency of malaria microscopists is supported and strengthened by training and Quality Assurance (QA) programmes with donor funds in public Health Facilities (HFs) but not in highly patronised private HFs in Nigeria. We report the competency assessment of malaria microscopists in three states of Nigeria: Lagos, Enugu and Cross-River, as a first step in implementing a national on-the-job supervision in private sector HFs.

Seven Proficiency Testing (PT) slide panels made up of three negatives and four positives (Plasmodium falciparum (Pf) – 523 parasites/ul of blood; Pf, 115 parasites/ul of blood; P ovale, 15,589 parasites/ul of blood and Pf/Po, 24,859 parasites/ul of blood) were distributed to 71 private HF-microscopists with real-time assessment by trained Research Laboratory Associates. Malaria microscopy practices and quality of microscopes were assessed. Challenges with microscopy was reported in 65-88% of the facilities in the three states. The mean sensitivity and specificity of the microscopists respectively were: Lagos (61.6% and 9.2%); Cross River (60% and 44.3%) and Enugu state (34% and 28.3%). Overall, 20% and 10% of the microscopists had sensitivity and specificity respectively of between 81-100% while 30% and 55% of the microscopists had sensitivity and specificity of ≤ 20% respectively. There was a high likelihood of negative slides being reported as positive that may contribute to overtreatment. The HFs with non-functional microscopes that could neither be used for FBC/differentials nor for malaria microscopy was 46-50%.

Poor/lack of training on basic malaria microscopy, absence of standard operating procedures for malaria microscopy, re-use of slides, obscured objectives and eyepieces etc were some of the challenges observed. Best practices in malaria microscopy and by extension the generation of unreliable patients’ results are threats to effective fever management. There is an urgent need for training and supportive supervision for private HFs microscopists to improve their competency.

**Keywords:** Malaria Microscopists, Full Blood Count (FBC), Proficiency Testing (PT)
QUALITY ASSESSMENT OF COMMERCIAL GIEMSA STAINS FOR MALARIA MICROSCOPY IN LAGOS, NIGERIA


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The quality of stains used in malaria microscopy is critical in the elucidation of Plasmodium parasites in malaria blood films for accurate diagnosis of malaria. Poor quality stains could result in false results with great consequences on patients. Several brands of Giemsa stain are available commercially but their quality and utility for malaria diagnosis has not been assessed.

Labeled Giemsa stains purchased from several outlets in Lagos were assessed using prepared thick and thin malaria blood films (MBFs) on the same slide. Ninety MBFs were stained using standard protocol and according to the manufacturer’s instruction when provided. Giemsa prepared in the laboratory was used as control. The quality of the stains was assessed macroscopically and microscopically.

High-grade Giemsa was not available while the same brands were available in all shops visited at cheaper cost in 100ml package. Some of the stains were already prepared in working solutions for immediate use against standard protocol. Of the 90 stained MBFs, 25(28%) were too dark, 45(50%) [purple-coloured WBCs], 30(33.3%) [purple-coloured red blood cells in thin films]; 55(61%) [good background], 40(44%) [good stain colour], and 71% had debris. All slides stained for 3 minutes according to the manufactures instruct were not readable microscopically; 10(11%) of the MBFs appeared red, suggesting acidity of the stain. Overall, only 2 of 7 (28.57%) commercial stains were good for malaria microscopy. No manufacturer’s contact, batch number or expiry date was on the package.

Poor quality brands of commercial Giemsa sold in Lagos will compromise malaria microscopy tests that are ultimately used in malaria case management.

Keywords: Giemsa stain; Malaria microscopy; Poor quality commercial Giemsa

EXPLORATORY PRODUCTION OF DRY TUBE MALARIA POSITIVE CONTROL PANEL FOR QUALITY CONTROL OF MALARIA RAPID DIAGNOSTIC TESTS


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Malaria Rapid Diagnostic Tests (MRDTs) are the current standards for malaria diagnosis along with microscopy. Quality Control Materials (QCM) are indispensable in providing quality check on MRDTs during storage, after transportation and when Health Care Providers (HCPs) are suspicious of the test results. The monoclonal antibodies in MRDTs could be denatured when exposed to high temperature. QCM are highly characterised and could be produced from positive malaria blood samples and by recombinant technology. Recombinant proteins (RPs) can be produced in large scale unlike clinical samples that are laborious with other concerns. Characterised QCM from clinical samples is available but RPs is yet to be validated. We describe dried human QCM from blood where cold storage may not be required for transport to facilities for use by HCPs. Characterised QCM from clinical samples diluted at 200 and 2000 parasites/μl, which were stored in 50μl aliquot at -80°C. Each cryovial had known antigen concentration and parasitaemia. The cryovials were uncapped and left to air-dry for 24-48hrs. Capped QCM with blood samples kept outside and frozen served as control. The dried QCM were reconstituted using normal saline and tap water and used to perform MRDTs. Dried uncapped QCM remained positive although the test line strength was lighter compared to the control. The reconstituted samples showed decay of red blood cells with a foul odour. This is the first description of dried whole blood samples for the quality control of MRDTs. Dried clinical samples are easy to transport and will not require additional resource for storage while also making materials available for HCPs to assess the quality of MRDTs in their facilities. Optimisation of the clinical samples and addition of preservative will maintain the integrity of the human QCM.

**Keywords:** Dry Blood quality control panel; positive control well; malaria rapid tests

15/BMS/17

**CHALLENGES IN MALARIA RAPID DIAGNOSTIC TEST PERFORMANCE BY HEALTH CARE PROVIDERS IN PRIVATE HEALTH FACILITIES IN NIGERIA**

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Private sector Health Facilities (HFs) in Nigeria attend to a significant proportion of febrile patients. They should effectively implement the National Policy on Diagnosis and Treatment of Malaria that recommends prior parasitological confirmation of all suspected cases of malaria with either Malaria Rapid Diagnostic Tests (MRDTs) or microscopy before treatment. The accurate performance of MRDTs by Health Care Providers (HCPs) and confidence in the test results are indispensable in promoting MRDT use. The absence of a structure in the private sector for supervision of HCPs may create a lacuna for continued presumptive diagnosis of malaria. We report challenges in the performance and use of MRDTs among HCPs in private HFs in three States in Nigeria where on-the-job supervision was implemented for the first time. One hundred and nine private health facilities in Lagos, Enugu and Cross River States who receive MRDTs from the Global Fund for Malaria Grant were randomly selected for assessment on the use of MRDTs. A total of 110 HCPs were assessed on the performance of MRDTs using a 17-point observation criterion. Highly characterised positive clinical malaria
blood samples were also used to perform MRDTs stocked in each HF to determine their reliability.

Seventy-five of the 109(69%) HFs assessed had at least one challenge performing RDTs. The mean performance score of HCPs was 12.08 (8.0–17.0) while the mean proportion of scores was 69.5% (36–100%). The graded RDT performance score showed that 6.4% of the HCPs scored 20–40%; 24.5% (41–60%); 37.3% (61–80%) and 31.8% (81–100%). Generally, 63% of the health workers scored below 80% in RDT performance. The challenges in performing MRDTs included: instruction manual not read (56%); use of excess buffer (55%); Desiccants not checked (54%); Reading RDT results before time (45%); Pricking of wrong finger (35%); difficulty in pricking finger (35%); addition of blood and buffer on buffer well in cassette (25%); deposited blood directly from finger to RDTs (25%), lack of confidence in high frequency of negative RDT results, stock-out etc.

The positive control sample boosted the confidence of the HCPs as it demonstrated that MRDTs stocked in HFs were reliable. Corrective action was immediately implemented and HCPs re-trained. Periodic training and on-the-job supervision of HCPs will promote accurate performance and increase MRDT use in private HFs.

**Keywords:** Malaria Rapid Diagnostic Test, Health Care Providers (HCPs), RDT performance

15/BMS/18

**INTERLEUKIN-10 AND INTERFERON GAMMA PROFILE IN PATIENTS WITH MALARIA INFECTION IN LAGOS, SOUTH-WEST, NIGERIA**

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Malaria is the world’s most prevalent parasitic disease and is a top public health concern. The immune response to *Plasmodium falciparum* infection involves interplay between different cell types and cytokines, there is dearth of data on the profile of IFN-γ and IL-10, and therefore the objective of the study is to determine the plasma profiles of IFN-γ and IL-10 in malaria patients in Ikorodu Local Government Area (LGA) of Lagos State. A total of 1130 participants who assessed malaria diagnostic services at four health facilities at Ikorodu LGA were screened for malaria by microscopy using Giemsa stained thick and thin blood films. Plasma level of IL-10 and IFN-γ was assessed among 140 malaria positive patients and 8 malaria negative subjects, using indirect enzyme-linked immunosorbent assays (ELISA).

Mean plasma level of IL-10 was found to be elevated (6966.8 ± 5028.2 pg/ml) in malaria infected individuals compared to the aparasitemic control group 5747.6 ± 3861.7 pg/ml and this was statistically significant (p<0.01). In contrast IFN-γ levels were found to be lower in malaria patients (17277.6 ± 12055.8 pg/ml) compared to a parasitaemic control group (23362.4 ± 11341.3pg/ml). There was, however, a significant relationship between IL-10 and parasite density (r=0.213; p value= 0.009); negative correlation between age and parasite density (r=-0.163; p=0.048).

Levels of IFN-γ and IL-10 and the relative balance between the pro- and anti-inflammatory cytokines response, illustrates how populations residing in areas of varying disease endemicity may respond to *P. falciparum*-induced immune challenge.

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Keywords: Malaria; Plasmodium falciparum; interleukin-10 (IL-10); interferon-gamma (IFN-γ)

LOW MALARIA RATES AMONG CLIENTS THAT PURCHASED ANTIMALARIALS FROM MEDICINE RETAILERS IN NIGERIA

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Prompt and effective case detection and treatment are vital components of the malaria case management strategy as malaria-endemic countries implement the testing and treatment policy. The implementation of the policy in public and formal private sectors continue to receive great attention while the informal private sector (mostly the Proprietary Patent Medicine Vendors [PPMVs]) where about 60% of patients with fever in Nigeria seek treatment is yet to be integrated. The PPMVs sell artemisinin combination therapies (ACTs) without prior testing and are highly patronised. The need to expand access to diagnosis in the huge informal private sector in Africa and Asia is yet to be fully explored. Evidence on malaria parasitaemia among clients that patronise retail drug stores is needed for policy that will permit PPMVs to mandatorily perform a test before sales of ACTs. This is critical in ensuring malaria testing is done in all settings to attain national targets.

A cross-sectional study among 1,279 adult clients, 20 years and above, who purchased malaria medicines from 119 selected PPMVs' outlets in five states in Nigeria and the Federal Capital Territory of Abuja: Adamawa, Cross River, Enugu, Lagos and Kaduna states to confirm if they had malaria or not. Exit interviews using standard case report questionnaires was conducted and blood smears for microscopy was collected from the clients before leaving the medicine shop.

Of the 1279 clients who purchased malaria medicines from the PPMV outlets, 107 (8.4%) were confirmed to have malaria parasites. The malaria prevalence in the various study points ranged from 3.5% to 16%. A very high proportion of clients who had no need for malaria medicines (84% – 96.5%) purchased and used antimalarial medicines from the PPMVs. Nausea/vomiting, poor appetite, chills, bitter taste in the mouth and dark urine were symptoms that were significantly associated with malaria among the adult clients (p<0.05) but not fever (p = 0.06).

Parasitological confirmation of malaria should be instituted in retail medicine shops to guide the sales or dispensing of antimalarials. This study provides evidence to expand access to universal malaria testing in the private sector to align with policy implementation in public health facilities and thus guide the sales and use of ACTs.

Keywords: Malaria case management; Informal sector; parasite confirmation; Medicine retailers; Malaria over-diagnosis; Over-treatment; Private sector.
EVALUATION OF CAPILLARY AND VENOUS BLOOD SPECIMENS FOR MALARIA DIAGNOSIS

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The use of peripheral (capillary) blood for microscopy and rapid diagnostic test is currently the practice advocated for malaria parasite detection because of the less invasive nature of obtaining sample when compared to the various limitations of obtaining venous blood sample. Sequestration of parasitized red blood cells into the microvasculature of vital organs by P. falciparum makes them not always present in peripheral blood; hence, the study evaluates the usefulness/suitability of capillary and venous blood as specimen for malaria diagnosis.

A descriptive, cross-sectional study of 1,675 consented participants that presented with symptoms of malaria at the five health facilities in Ikorodu LGA, Lagos state – Nigeria between July 2013 and Feb 2014. Thick and thin blood films were prepared from all participants using both venous and capillary blood. The Giemsa stained slides were read using light microscope by 2 competent independent microscopists, who were blinded to the results of the other, discrepant result were read by third microscopist.

Venous blood smears detected more malaria parasites 291 (17.4%) than capillary blood smears 286 (17.1%) although the difference was not statistically significant (Kappa= 0.935 0.024SE), detection agreement was 98.1%, showing that parasites detected from capillary and parasites detected from vein are equally likely. No significant correlation was observed between capillary and venous blood parasitaemia (r = 0.3497, P = 0.1842).

Either venous or capillary blood can be used for malaria diagnosis since there was no statistically significant difference between sensitivity of the two sources of samples.

Keywords: venous blood, capillary blood, malaria diagnosis.

ASSESSMENT OF PLASMODIUM FALCIPARUM-RESISTANT GENES TO ARTEMISININ AND CHLOROQUINE IN PATIENTS PRESENTING WITH MALARIA INLAGOS, NIGERIA

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Emergence and spread of artemisinin resistant Plasmodium falciparum (Pf) threatens the global malaria elimination target. Efficacy of the artemisinin-based combination therapy (ACTs) requires that both artemisinin and partner drug remain effective. Mutation in Kelch13 (K13), Pf-transporter resistance gene (PfCRT) and multidrug resistant gene-1 (mdr-1)

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are associated with resistance to artemisinin, chloroquine and amodiaquine respectively. Monitoring of artemisinin in the country is only just emerging.

A cross-sectional study was conducted among children and adults in 7 health facilities and 20 communities in different Local Government Areas of Lagos State, Nigeria. Malaria microscopy was done to confirm those with parasitaemia. Of this number, 404 malaria positive dried blood spots (DBS) were collected. DNA was extracted from all the DBSs using QIAamp® DNA Mini kit. Nested PCR and sequencing were successfully done for PfK13 (n=195), PfCRT (n=208) and PfMDR-1 (n=217).

We observed in the K13-propeller domain, A578S (0.5%), D464N (0.5%) and Q613H (1.5%). PfcrthaplotypeswereCVMNK (wild strain) is 64(35.1%) while the mutant strains were CVIET=127 (61%); CVIDT= 4 (1.9%); CVMDT= 3(1.4%); CVIKT= 2(1.0%); CVINT= 1(0.5%); CVMET=1(0.5%); CVMEK= 1(0.5%) and PfMDR1: 41 (19%)(T28S=1 (0.5%); N86Y=27 (12.4%); E130K=5 (2.3%); S149P=1 (0.5%); D1246Y=7 (3.2%).

A case of A578S was reported and is known to be associated with prolonged parasite clearance time, suggesting a likely case of tolerance to ACTs in Lagos State. CVIKT, CVMKT haplotypes have not been reported elsewhere and high frequency of the CQ-resistant haplotypes (CVIET) and mutations in Pfdmdr1 suggests that CQ-resistant parasites are still in circulation, and this could threaten the efficacy of partner drugs in the ACTs.

Keywords: Plasmodium falciparum, Antimalaria, Drug resistance genes.

15/BMS/22

AMELIORATIVE INFLUENCE OF BRYOPHYLLUM PINNATUM AGAINST CISPLATIN-INDUCED TOXICITY IN RATS: ROLE OF OXIDATIVE STRESS

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Cisplatin is an alkylating anti-cancer drug used in the treatment of various malignancies. Its use is limited by various side effects such as nephrotoxicity and hepatotoxicity. This study was carried out to investigate the protective effects of lyophilized leaf juice extract of Bryophyllum Pinnatum (BP) against cisplatin-induced liver and kidney injury. Male albino rats (100-150g) were randomly assigned into five groups (n=6): group 1 - vehicle (10 ml/kg, p.o.; normal control), group 2; vehicle (10 ml/kg) and groups (3-5) BP (100, 200 and 400 mg/kg, respectively) for 10 days. Cisplatin (7.5 mg/kg, i.p.) was given on the 7th day to animals in groups (2-5). The rats were sacrificed on the 10th day, one hour after last drug treatment. Blood, liver and kidney were collected for the measurement of biochemical parameters.

Cisplatin significantly increased serum biomarkers of liver injury: aspartate transaminase (1.36 folds), alanine transaminase (1.78 folds) and alkaline phosphatase (1.2 folds) which were reversed by BP treatment. Cisplatin induced a marked renal failure, characterised by significant increase in serum creatinine (2.05 folds) and urea (2.07 folds) levels, which was ameliorated by BP treatment. Cisplatin-induced lipid peroxidation and nitration were, attenuated by BP pretreatment. Treatments with CC enhanced the activities of superoxide
dismutase, catalase and glutathione. The results of the histological studies showed that BP pretreatment protected the integrity of the liver and kidney from cisplatin toxicity. This study showed that *B. pinnatum* prevented cisplatin-induced liver and kidney damage through increase in antioxidant enzyme activities.

**Keywords:** Glutathione; lipid peroxidation; liver injury; renal failure

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**PROTECTIVE OF MANGIFERA INDICA STEM BARK EXTRACT AGAINST TESTOSTERONE-INDUCED BENIGN PROSTATIC HYPERPLASIA IN SPRAGUE DAWLEY RATS**

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Benign prostatic hyperplasia (BPH) is one of the most common conditions affecting up to 25% of men aged 50-65 years. It is characterised by prostatic enlargement coincident with tissue histomorphology.

This study sought to investigate the protective effect of the hydroethanolic stem bark extract of *Mangifera indica* (MI) against testosterone-induced benign prostatic hyperplasia. Male wistar rats (150-250g) were divided into 5 groups (n=8). They were treated for 28 days as follows; Group 1 - normal saline (10ml/kg, p.o.; normal control); Group 2: normal saline (10 ml/kg) + testosterone (3mg/kg, s.c.) and groups 3-5: MI (100, 200 and 400 mg/kg, p.o.) + testosterone (3 mg/kg, s.c.). The animals were sacrificed on the 29th day and the prostate harvested for biochemical and histological assays, while blood was collected for serum testosterone and prostate specific antigen (PSA) analysis.

**Results:** Testosterone injection produced significant elevation of serum testosterone and prostate specific antigen levels suggesting BPH, which was ameliorated by MI treatment. Moreover, testosterone-induced increase in prostate index was also reversed by the extract treatment [1.38 folds]. The induction of lipid peroxidation and deficit in glutathione activity by testosterone was attenuated by MI treatment. The analysis of histo-architecture of the prostate has also shown that there was a significant improvement in prostatic cells of testosterone induced rats when treated with MI extract.

**Conclusion:** The results obtained from this study showed that *Mangifera indica* possess protective effects against prostatic hyperplasia. Its actions are mediated possibly through inhibition of 5α-reductase or enhancement of antioxidant system activities. Thus, *M. indica* could be a potential phytotherapeutic agent in the management of BPH.

**Keywords:** 5α-reductase; prostate specific antigen; oxidative stress; prostate index; glutathione
INFRARED RADIATION KILLS WOUND PATHOGENS

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Background: Infected wounds constitute a major cause of healthcare concern and are difficult to treat due to the emergence of drug-resistant bacteria. In the course of his clinical practice, CBA, one of the researchers, found that a number of patients with infected wounds were treated with infrared radiation (IRR) and responded with remarkable healing than could be explained by its known ability to elicit increased local blood circulation. It was thought that IRR could have some bactericidal effect.

Objective: This study was undertaken to evaluate the novel antimicrobial approach involving photoactivating localised photosensitizers of bacterial cells using radiation from an IRR lamp (150W; 220-240V).

Methods: Suspension of Staphylococcus aureus, Streptococcus pyogenes, Pseudomonas aeruginosa, Klebsiella pneumonia and Escherichia coli was transferred into an empty Petri dish with the aid of micropipette. The open Petri dish containing bacterial suspension was then taken immediately to wooden box enclosing an affixed IRR lamp where each suspension was irradiated separately for 5, 10, and 15 minutes. Subsequent dilution of each of the irradiated suspensions was cultured on blood agar and incubated at 35°C for 20-24 hours.

Results: All species were susceptible to killing. IRR dose of 1585.90J/cm² enabled the killing of Gram-negative species (K. pneumoniae, P.aeruginosa & E.coli), higher intensity IRR of 2373.58J/cm² was required to achieve a substantial kill of the gram-positive species (Staph. aureus & Strep. pyogenes). Both low and high IRR doses (1585.90J/cm² & 2373.58J/cm²) were able to kill large proportions (96.9%-100% of suspension containing 10⁸ CFU/ml) of Gram-negative bacteria while very high dose of 3171.89J/cm² achieved 100% killing of all the bacterial species. A comparison of log numbers of Staphylococcus aureus, Streptococcus pyogenes, Pseudomonas aeruginosa, Klebsiella pneumonia and Escherichia coli between the control and the experimental groups with IRR dose of 2373.58J/cm² showed a significant difference at P<0.05.

Conclusion: The result of this research work implies that lethal photosensitization using Infrared radiation could be an effective means of decreasing the microbial burden in wounds. Physiotherapists and other clinicians now have an additional armamentarium in clinical management of wounds. This finding should stimulate further research aimed at standardising both technical and required procedural steps for quality healthcare delivery.

Keywords: infrared radiation, infected wounds, pathogens.
PROTECTIVE ROLE OF CITRULLUS COLOCYNTHIS LINN AGAINST CISPLATIN-INDUCED HEPATO- AND NEPHROTOXICITY IN RATS

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Introduction: Cisplatin-induced acute liver and kidney injuries are serious problems in cancer patients during treatment of solid tumours.

Objective: This study sought to investigate the protective effect of ethanolic fruit extract of Citrullus colocynthis (CC) against cisplatin-induced nephro- and hepatotoxicity in rats.

Methods: Male albino rats (100-150g) were divided into 5 groups (n= 6) and treated as follows: Group 1: vehicle (10 ml/kg, p.o.) (normal control); Group 2: vehicle (10 ml/kg); Groups 3-5: CC (100, 200 and 400 mg/kg, p.o.), respectively, for 10days. Cisplatin (7.5mg/kg; i.p.) was administered on the 7th day to animals in Groups (2-5) one hour after pre-treatment. One hour after the last treatment on the 10th day, the animals were sacrificed. The liver, kidney and blood were collected for biochemical, histological and haematological analysis.

Results: Cisplatin induced a significant increase in the serum levels of ALT (1.98 fold), ALP (2.13 folds), creatinine and urea which was ameliorated by CC (100-400mg/kg) treatment. The decrease in haematological parameters and induction of lipid peroxidation by cisplatin was prevented by CC pretreatment. Also, treatment with CC enhanced the activities of antioxidant enzymes-superoxide dismutase, catalase and glutathione. More importantly, histological assay showed that CC pre-treatment preserved the integrity of the liver and the kidney.

Conclusion: The results obtained from this study showed that Citrullus colocynthis possesses hepatoprotective and nephroprotective actions through enhancement of antioxidant enzyme activities. Thus, Citrullus colocynthis could be a potential phytotherapeutic agent in the management of anticancer drug-induced liver and kidney damage.

Keywords: Cisplatin; histology; liver injury; superoxide dismutase; creatinine
GRADUATE UNEMPLOYMENT DATA TRACKING MECHANISM APPLICATION AND SIGNIFICANCE IN CONTROLLING GRADUATES PARTICIPATION IN CRIMES IN NIGERIA

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The International Labour organisation (ILO) (1988) defines unemployment as the pool of people above a specified age who are without work, are currently available for work during a specified period of reference. Graduate Unemployment in Nigeria has been a scourge to the extent that job seekers today go to the National stadium for job tests and interviews. Unemployment in its ramification is undesirable because it introduces uncertainty, despair and inequities into the economic system. Graduate unemployment which is a segment of the educated unemployment can be very dangerous for any economy as it breeds different types of social vices as lack of knowledge about its growth can be retrogressive. This study will determine the actual graduate unemployment data in Nigeria. The study will also assist in determining whether there is any positive unexpected relationship between the rate of graduate unemployment and the rate of graduate involvement in crimes in Nigeria which will lead to providing the best analytical graduate unemployment data tracking mechanism in Nigeria. The study concentrated in ten (10) local government areas in Imo state. Certain crimes have been identified like kidnapping, armed robberies, bank fraud, drug peddling etc. The study data were collected by the instrument of questionnaires.

Keywords: Graduate Unemployment, Unemployment, Data Tracking, Economy, Crimes

MICRO, SMALL AND MEDIUM SCALE ENTERPRISES: CATALYST FOR ECONOMIC DEVELOPMENT

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The growth-cyclical fluctuations in micro, small and medium scale enterprises have once more presented new frontiers in the search for positively related indigenous skills, entrepreneurship, technology and functional institutional and administrative framework. The study traces the operational disturbances of these enterprises to low productivity, high mortality, in accessibility and high costs of capital, structural in balance in policy guidelines and inability of these enterprises to adjust to economic and market shocks, weakness of policy and institutional support mix to provide fair adjustments. The approach of study is essential empirically using sample size drawn from industrial parks in Anambra State. We
conclude that the relationship between these enterprises and economic development is unexpectedly negative meaning that factors that stimulate economic development have not impacted positively on the operations of these enterprises. We therefore recommend more positive change in attitudes and expectations, policy and programme reforms.

**Keywords:** Micro, Small and Medium Scale Enterprises, Economic Development, Entrepreneurship

15/BUS/03

**RISK MINIMISATION AND ROAD TRAFFIC CRASHES: EMPIRICAL EVIDENCE FROM ROAD SAFETY MANAGEMENT AUTHORITIES IN NIGERIA**

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This study was designed with the aim to examining selected risk minimisation techniques on road traffic crashes in Nigeria with special focus at the Federal Road Safety Corp, Lagos State Traffic Management Authority and Motor Traffic Department of the Nigerian Police Force. For this purpose, the researchers have been able to assess the significant influence of risk minimisation techniques on motorists’ driving behaviour and thus, examine the relationships that exist between the risk minimisation techniques and road traffic crashes.

This study employed a cross-sectional survey design. The study was conducted in Lagos Metropolis.

The research commenced with the gathering of relevant literature. The study employed stratified random sampling technique and thus gathered data through the use of structured questionnaire. The sample population consisted of 152 respondents made up of Top, Middle and Lower ranked officers within the sampling units drawn from the directorate offices within Lagos State, Nigeria. The statistical instruments employed for empirical analysis of collected data were a combination of Kolmogorov-Smirnov T-test and multiple regression techniques.

The study was able to establish some level of significance between the various risk minimisation techniques and road traffic crashes. The various risk minimisation techniques appeared to have significant effects if aptly applied in curding road mishap, and preventing incidences on our road.

The research work evidenced interlink between various constructs understudied. It therefore recommends that continuous investment in road network technology is imperatively crucial for road crashes identification, prevention, and minimisation. Also, Government should ensure that risk minimisation model be incorporated in the road safety scheme and ensure motorists and motoring public education and engagement towards its implementation.

**Keywords:** Risk minimisation, road traffic crashes, Road Safety Management Authorities, Lagos, Nigeria
A MULTI-PURPOSE THREE-PHASE QUALITY CONTROL CHART APPLIED TO THE LENGTH OF SERVICE AND RETIREMENT AT THE UNIVERSITY OF LAGOS

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Statistical quality control was originally designed for manufacturing of products. However, the method has been adopted in some other areas of human endeavour. For example, Shewhart’s normal-distribution-based statistical process control chart has been used in the detection and monitoring of hospital-acquired infections, measuring and interpreting environmental impacts, and petroleum exploration. In this study, an unconditional and non-parametric control chart was derived and applied to the length of service and retirement at the University of Lagos. The results showed easier computation and interpretation when compared with Shewhart’s mean-control chart. The theoretical results tend to support the practice of the length of service and retirement at the University.

Keywords: manufacturing, statistical process control, shewhart’s mean-chart, the ABALA variable-control chart

DETERMINATION OF PRICE LEVEL AND THE INTERACTION OF MONETARY AND FISCAL POLICIES IN NIGERIA

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This research was conducted to investigate the determination of price level and the interaction of monetary and fiscal policies in Nigeria. This study delves into monetary and fiscal policies with a view to elucidating their determination on price level. The data for this study were obtained from Central Bank of Nigeria’s (CBN) annual statistical bulletin 1975-2013. The Econometric Ordinary Least Square (OLS) technique was employed in obtaining the numerical estimates of the coefficients in different equations. The results of the analysis revealed that the variables contributed a seventy-eight percent (78%) influence on the determination of price level and interaction of monetary and fiscal policies of cost of funds in the economy. It also shows that they must attempt to keep the money supply growing at an appropriate rate to ensure sustainable economic growth and to maintain internal and external stability

Keyword: Price level, Monetary policy, Fiscal policy
IS THE NIGERIAN STOCK MARKET PREDICTABLE?

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The controversial debate on whether the future stock prices or returns can be predicted by current or past values of stock prices based on the efficient market hypothesis and random walk hypothesis has remained inconclusive empirically. The study examined the predictability of the Nigerian stock market in order to find out if present and past values of stock prices in the market have been able to predict changes in the stock market returns using current daily data from 2010-2015. The test revealed that movements in the prices of stocks traded on the floor of the Nigeria stock exchange are independent and random which means that future returns in the Nigerian stock exchange can be predicted by both past and present values of stock market prices. Thus, the study recommended that market information be allowed to flow unhindered and aggressive trading on a wide range of securities be encouraged so as to increase market depth.

Keywords: Predictability, Random, Non-parametric

DEMAND FOR REINSURANCE AND SOLVENCY OF INSURANCE BUSINESS IN NIGERIA: AN EMPIRICAL ANALYSIS

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The importance of reinsurance in the insurance business cycle cannot be overemphasised. The benefits of reinsurance include increased capacity, technical expertise, allocation of risks and limitation of financial distress. However, as an insurer gathers more underwriting experience, it is expected that less reinsurance is demanded. Hence, frequent demand may be sign of insolvency because it simultaneously reduces the variability of cash flows and financial leverage. The purpose of this research is to investigate if the excessive use of reinsurance is an indication of insolvency in the Nigerian insurance industry. Using purposive sampling techniques, ten (10) general insurance companies were selected from forty-nine (49) operating in Nigeria. Returns on Assets (ROA), Returns on equity (ROE) and size were used as indicators to measure the level of solvency while product diversification, claims ratio, combined ratio, reinsurance price, liquidity ratio and expense ratio were used as indicators to measure demand for reinsurance by primary insurers. The findings of the study reveal that there is significant relationship between the solvency and demand for reinsurance. Though, product diversification, combined ratio and reinsurance price are more significant than loss ratio, liquidity ratio and expense ratio. It is recommended that primary insurer should be more concerned about its concentrated business mix, combined ratio and the price (premium) of reinsurance. These can make demand for reinsurance to be more frequent.

Keywords: Reinsurance, solvency, primary insurer, cedant
REINSURANCE UTILISATION AND DEPENDENCE ON THE FINANCIAL PERFORMANCE OF NON-LIFE INSURERS: EVIDENCE FROM NIGERIA

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This study was conducted to establish the effect of reinsurance utilisation and dependence on the profitability of non-life insurance firms in Nigeria. Reinsurance is used by primary insurers as a device to cushion the effect of underwriting and solvency risks. However, an over dependence on reinsurance could cause depletion in the income of the primary insurer. This study examines whether reinsurance usage by non-life insurers in Nigeria positively or negatively affect their financial performance. The impact of Reinsurance utilisation and dependence (independent variables) were tested on two selected key performance indicators (KPI), Premium Growth Rate and Loss Ratio (dependent variables). 16 insurance companies in the non-life sector were engaged in this study due to accessibility of data. Secondary data taken from the annual reports of the insurance firms over the 10 year period from 2004 to 2013 were used for this research. These data were analysed using descriptive statistics, coefficient of determination ($R^2$), and linear regression. In addition, two hypotheses were tested and two models were developed for the linear regression analysis. The results show that there is a significant positive relationship between reinsurance utilisation and premium growth rate. Similarly, a significant positive relationship exists between reinsurance dependence and profitability (loss ratio). Based on these findings, it was recommended that non-life insurers should embrace more of reinsurance facilities particularly for risks of high loss potentials in order to enhance the stability of premium growth of the portfolios. In addition, Insurance firms in Nigeria should harness their claims management activities in order to minimize cost and exposure to underwriting risks.

Keywords: Reinsurance, Primary Insurer, Financial Performance, Premium Growth Rate, Loss Ratio.

AUDIT COMMITTEE EFFECTIVENESS AND AUDIT REPORT LAG IN NIGERIA

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The purpose of this paper is to examine the relationship between audit committee effectiveness and audit report lag in Nigeria. A cross-sectional data of companies for the year 2012 was collected from the Nigerian Stock Exchange Fact book. There are basically five variables upon which data was gathered. These variables are audit report lag, audit committee independence, audit committee size, audit committee financial expertise and audit committee frequency of meetings. The secondary source of data was adopted in this study. Data for audit report lag was got by computing the number of days between the date of financial year end and the date of the auditor’s report. Data for the explanatory variables were got from the annual reports and accounts of the companies sampled. The cluster sampling and simple random sampling techniques were adopted in arriving at a sample size of one hundred and thirty two companies. The data collected were analysed using the
Ordinary Least Square (OLS) regression technique. The result in this study suggests that there is a significant relationship between audit committee size, audit committee independence and audit report lag, while a non significant relationship between audit committee financial expertise, audit committee frequency of meetings and audit report lag was also reported. The implication of this result is a policy shift on the part of the Financial Reporting Council (FRC) of Nigeria towards ensuring independence of audit committee members and reduction in their size.

Keywords: audit report lag, audit effectiveness, audit committee, financial reports, agency theory

WORKPLACE DIVERSITY MANAGEMENT: A CORPORATE PERFORMANCE DRIVER

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Diversity has gradually grown into a significant topic in human resources management due to numerous dynamics which are producing aspirations of added diversity in people management. It is a developing certainty that organisations must tackle openly. Demographic developments also signify a public understanding where diversity is achieving additional outstanding position. Organisation management must value the resultant advantages of diversity and this necessitates a great deal of endeavour and understanding which both the employees and the organisations merit. To improve on diversity management, organisation management may emphasise several actions which in truth values and breathes diversity all through. This paper puts forth a few possibilities including: valuing diversity, achieving people commitment, dedication to diversity management, encouraging inclusion, offering assistance in family spirit, augmenting people empowerment, careful analysis of prospective markets, building a unique recruitment and selection scheme, excellent orientation programmes for new employs, trainers and mentors with elevated compassionate and social abilities, internal training of human capital when it becomes difficult to fill certain positions, clear performance management plans, career development, regular and careful measurement of the specific diversity assemblages in organisation departments, instant correction of workforce assessments that are not performance based, plainly devised organisation strategy which incorporates diversity, diverse and developed top management team, sustenance of a communication and behaviour approach. Except organisation management is concerned with the best interest of the employees, effective diversity management becomes impossible therefore, they must somewhat wheel their focus increasingly to provide for organisation members.

Keywords: Workplace, Diversity. Management, Corporate, Performance, Driver
E- PAYMENT AND THE NIGERIAN PUBLIC SECTOR: CHALLENGES AND PROSPECTS

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Public sector is about public/social services to the citizens. Therefore, E-administration is the process of administering policies through the internet through the use of Information and Communication Technology to deliver services to Government ministries, departments and agencies in the Nigerian Public Sector. Different works shall be examined such as journals, articles, newspapers, editorials and other relevant publications on e-administration. Data shall also be sourced primarily through oral interviews from those who are into public services in ministries and department. By the year 2007, the government of Nigeria introduced the process of electronic money transfer to ministries, agents and departments. Until recently, most organisations received their emoluments directly into their personal account through the Central Bank of Nigeria. It was discovered that through the use of e-administration through e-payment system, there were accruing advantages which makes the citizens to be connected with governance. The government became more efficient and robust, cost of governance and transaction were scaled down and transparency was enhanced. For citizens to enjoy more of Government and its e-administration, there should be improvements in the country’s electricity generation since all the laptops, desktops, and electronic gadgets in use need power.

Keywords: e-administration, public sector, accountability, e-payment, e-governance

MANDATORY IFRS REPORTING AND STOCK PRICE INFORMATIVENESS: A STUDY OF NIGERIAN QUOTED COMPANIES

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The main objective of this paper is the analysis of the mandatory IFRS adoption by Nigerian firms in 2012 on stock price informativeness. Using a sample of 129 quoted Nigerian companies during the 2011 to 2014 period and adopting the OLS regression analysis and the dependent variable – stock price informativeness. The result shows that, Nigerian quoted companies show a significant raised in stock price informativeness due to more disclosures in their financial statements and enhanced information comparability, after the mandatory adoption of IFRS, hence controlling set of firm-risk and market variables, seem to have a joint effect on the share prices, leading to an increase in foreign direct investment. Mandatory IFRS adoption increases analysts’ ability to incorporate industry-level information into stock price. The main limitation of the study is that the sample represents only selected Nigerian firms. The findings of the study may have implications for the firms’ management staff, global potential investors and market regulators, as they reveal what information influences the cost of equity capital in the market. The results are consistent
with the financial principle stating that the greater the market information, the higher the volatility of the share price of a company. As a result of this research, one is able to figure out that with the adoption of IFRS reporting format stock price movement should be anticipated by companies more than the pre-IFRS era.

**Keywords:** Financial disclosure, IFRS, information environment, IFRS mandatory adoption; stock return synchronicity

15/BUSE/13

**MANDATORY IFRS ADOPTION AND ACCOUNTING QUALITY OF NIGERIAN BANKS**

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This study examined the impact of mandatory adoption of International Financial Reporting Standard (IFRS) on the quality of accounting information of Nigeria banks. The study adopted the Survey research design involving the collection of data from accounting academics in selected private universities in Nigeria. Primary and secondary data were employed and copies of Questionnaire were administered to respondents. Data were also gleaned from the annual report of 15 Nigeria banks listed on the floor of the stock exchange market. Two hypotheses were formulated and tested using Simple regression and paired T-test at a significant level of 5%. Findings revealed a significant relationship between IFRS adoption and quality of accounting information. The study also contributes to knowledge as it gives an insight into the possible outcome of future research covering a wider spectrum. Consequently, the study recommended that accountants should be mandated to and probably sponsored by their various institutions/organisations to attend workshops, conferences and trainings on IFRS periodically.

**Keywords:** Accounting information, decision making, IFRS, multinational companies, quality

15/BUSE/14

**MANDATORY IFRS INTRODUCTION AND FINANCIAL STATEMENTS COMPARABILITY: EVIDENCE FROM NIGERIAN LISTED COMPANIES**

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The study examines whether mandatory introduction of International Financial Reporting Standards (IFRS) enhances financial statements comparability of companies listed on the Nigerian stock exchange. The study specifically investigates the relationship between SAS and IFRS introduction based on key performance indicators of listed companies in Nigeria in terms of liquidity, profitability, gearing, reported earnings and market value. A survey study research method was employed where 20 listed firms’ published financial reports for 2011 under SAS was compared with 2012 under IFRS. Mean, standard deviation and Pearson Correlation Statistic methods were used for the analysis. The findings revealed that
the adoption of IFRS in Nigeria enhanced credible and qualitative financial statements that would engender economic growth and development. The study therefore recommends that government should empower significantly the financial reporting council of Nigeria (FRCN) to monitor and enforce standards and training to smoothen the introduction and compliance with IFRS.

*Keywords*: Financial Reports, IFRS, Introduction, Key Performance Indicators, SAS

15/BUSE/15

**TOTAL QUALITY MANAGEMENT AND PERFORMANCE OF TELECOMMUNICATION FIRMS IN NIGERIA**

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This study examines the link between Total Quality Management and performance of telecommunication firms in Nigeria. The research instrument utilised for the study was completed by 122 respondents drawn from two leading telecommunication firms (MTN and Globacom) in Nigeria. Utilising the regression technique, results of data analysis indicate that TQM practices such as process improvement and employee empowerment significantly influence firm performance. Top Management commitment was found not to have a relationship with organisational reputation. It is suggested that employee contribution not only to work processes but also to decision making, encouragement to set objectives for themselves and motivation towards their work enhance their understanding and commitment to their job and the organisation at large.

*Keywords*: Total Quality Management, Telecommunication, Process Improvement, Firm Performance, Employee Empowerment

15/BUSE/16

**MODELLING RELATIONSHIP BETWEEN HUMAN CAPITAL MANAGEMENT AND ORGANISATIONAL SUCCESS: Evidence from Nigerian State Universities**

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The management of human capital has become an essential and controversial aspect in any competitive environment. Consequent upon the competitive nature, a quite number of institutions especially the state universities have suffered and experienced high brain drain, job dissatisfaction and labour turnover due to their inability to manage human capacity. However, the need to develop talents is no longer hidden, what remains controversial is the best method of human capacity management especially in the state owned universities. Thus, this study examines the relationship between human capital management and organisational success of using three state owned universities, southwest, Nigeria. These universities (Ekiti State University (EKSU), Lagos State University (LASU), Tai Solarin University of Education (TASUED) were chosen for their uniqueness. Survey research
design was adopted with 398 respondents. Self-administered questionnaire was adopted and the responses obtained were analysed with the adoption of Structural Equation Modelling (SEM). However, the results indicate that adequate leadership practices; learning capacity; workforce optimisation; knowledge accessibility; workplace culture and; mentorship are important factors in determining the degree at which employees are engaged and retained on their jobs and thereby increase their productivity level. Managers and policy makers should take these factors into consideration while formulating their employment policies in order to have formidable, efficient, and productive workforce.

**Keywords**: Human Capital, Leadership Practices, Knowledge Accessibility, Learning Capacity, Workforce Optimisation

15/BUSE/17

**SKILL MANAGEMENT AND UNIVERSITIES COMPETITIVENESS: AN EMPIRICAL EVIDENCE OF NIGERIAN PRIVATE UNIVERSITIES**

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This paper examines the effect of academia skill management on universities competitiveness in Nigeria private universities. A descriptive research method (Structural Equation Model {AMOS 22} was applied to analyse the two hundred and seventy four (274) copies of valid questionnaire completed by faculty members of the selected universities in South-West Nigeria using stratified and simple random sampling techniques. However, the results show close relationships between the dependent and independent variables. The study indicated that efficient skill management of faculty have positive significant implications on institutions competitiveness. This suggests that skill attraction, skill development, skill utilisation and skill retention have significant effects on teaching, research and innovation excellence and subsequently enhance university’s competitiveness.

**Keywords**: Skill Attraction, Skill Development, Skill Utilisation, Skill Retention, Competitiveness.

15/BUSE/18

**STRATEGIC HUMAN RESOURCE MANAGEMENT PRACTICES AND COMPETITIVENESS OF SELECTED ORGANISATIONS IN NIGERIA**

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Nigeria organisations have adopted different human resource management practices. Many of these practices have failed to achieve the desire improvements in organisational performance and competitiveness because they were not strategic enough to give the valuable results. These developments created the need for the application of strategic human resource management practices with a view to enhancing organisational performance and competitiveness. The study examined the extent to which strategic human resource management practices have been implemented in the selected organisations, and
whether the strategic human resource management practices have significant relationship with organisation competitiveness, innovations/quality products business processes, productivity, increased sales and market share. A research survey research design was adopted. Stratified random sampling technique was used to select a sample of questionnaires. The data were analysed by using correlation and multiple regressions. The results provide sufficient evidence to conclude that there is significant relationship between strategic human resources management practices and organisational competitiveness in Nigeria organisation. The study concluded that strategic human resource management practices such as strategic recruitment, performance management, teamwork and learning capacity of organisations are critical factors in enhancing profitability and competitiveness. It is recommended that Nigerian small, medium and large sale organisations could consider the proper and effective application of strategic human resource management practices in preference to the weak and ineffective traditional personnel or human resource management practices in enhancing organisational out comes such as leveraging competitiveness or organisational competitiveness.

**Keywords:** Strategic HR practices, Performance Management, Competitiveness, innovations, quality products, increased sales and market share, profitability.

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**INFLUENCE OF FINANCIAL MANAGEMENT PRACTICES ON MANDATORY IFRS ADOPTION: EVIDENCE FROM NIGERIA**

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This study seeks to investigate the effect of selected financial management practices: Equity finance, foreign debt capital and taxation on the drive towards mandatory IFRS adoption in Nigeria. The research design used is the survey approach where questionnaire was administered on management staff of some multinational companies in the Lagos metropolis while the regression model was employed to analyse the results. According to the findings from the study, although the drive for greater equity and foreign debt capital, as sources of funding, constitute positive signals for accelerated IFRS implementation, the second fiddle being played by taxation as a source of government revenue, on account of the pre-eminence of crude oil, also constitutes additional impetus for IFRS adoption in Nigeria. IFRS implementation should be vigorously pursued as all the three indices are currently in favour of corporate organisations, before the government suddenly wakes up to the realisation that corporate taxation is actually very important. It is not to the knowledge of this author that the impact of these three variables on IFRS adoption has been studied before.

**Keywords:** Equity finance, foreign debt capital, IFRS, questionnaire, regression model, taxation.
LABOUR STANDARDS AND THE FLEXIBLE WORKFORCE: CASUALISATION OF LABOUR UNDER THE NIGERIAN LABOUR LAW

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In contemporary times, there have been many scholarly works and discussions about the changing nature of work and the employment relationships. In the past, work was done full time and expected to continue indefinitely until either party gives a notice of termination. However, the nature of work has taken a new dimension with the adoption of flexible work arrangements by many firms globally. There are factors that have facilitated this, they include technological improvements in communication, and information systems that made it easier for organisations to specialise their production, assemble temporary workers quickly for projects, and rely more on outside suppliers. Labour laws designed to protect permanent employees also fuelled the growth in flexible work arrangements by encouraging employers to avoid the mandates and costs associated with these laws. Scholars have argued that the new forms of work arrangements have led to the prospects of a “race to the bottom” in labour standards, particularly in the developing nations. Looking at the conditions in developing countries like Nigeria one can see that labour standards are being compromised by most firms involved in Casualisation.

The Nigerian situation is taking a different pattern in the sense that casualisation is now the dominant form of flexible work arrangement, particular in the private and informal sectors. This paper therefore seeks to look at the labour laws in Nigeria to determine whether it contains provisions to regulate the employment conditions of casual and contract workers or protect them from exploitation. Furthermore, practical recommendations will be made to help policy makers initiate and make reforms in our labour and employment laws in order to regulate casual/contract employment and protect these workers from exploitation.

Communications Commission (2013)

Keywords: Communications Commission, policy makers, Labour laws, Casualisation

ORGANISATIONAL, INDIVIDUAL AND GROUP RELATIONS: DEVELOPING A FRAMEWORK FOR UNDERSTANDING WORKPLACE BULLYING

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Workplace bullying according to Owoyemi (2007; 2010) is a form of anti-social behaviour in the workplace that occurs as a result of unequal power relations between two individuals, or a group of people and another individual and/or a group of people in the workplace. This negative behaviour can cause distress, discomfort, physical and/or psychological harm. In this context, there is the tendency to assume that bullying in the workplace is a function of multiplicity of reasons, ranging from organisational factors such as structure,
work environment, job design leadership style, personality, power tussle, and so on. The ability of targets to defend themselves from the bully or bullies, not to do anything or even report experiences of bullying to the right authorities may be related to a power relations such as power imbalance or mis-use. Going by the above, bullying can be viewed as an interaction in which the person confronted or bullied ends up in an inferior position and becomes the target of systematic negative social acts. This paper is aimed at developing a framework for understanding why and how bullying occurs. The paper sheds more light into the concept of workplace bullying and should stem up further interest in the area on which future empirical research will be reported. The methodology used is based on extant literature review of existing works of other researchers in various parts of the world. This is a conceptual paper and it is framed within the causes, and outcomes of bullying. That is, workplace bullying is as a result of the interactions of some factors that occur at three levels; first, the organisational level which is made up of the contemporary cultural context of work environment, organisational structures and other all work components that can enhance the climate for workplace bullying to grow. Second, the individual level, that comprises of the characteristics of the bully, victim and organisation. And third, the group level, which is where the interactions occur between the targets, perpetrators and the organisation. The interactions between the different levels at which bullying occurs will determine the type of bullying behaviours employees are exposed to and as well as the interventions aimed at dealing with the negative behaviours. The paper concludes that workplace bullying occurs at three levels and power relations are interplay between these levels. Thus, the interactions at these levels are important for better understanding of the concept.

**Keywords:** Workplace Bullying, Organisational, Individual, Group, Power Relations

**15/CLS/01**

**VIRGIN COCONUT OIL AUGMENTS THE HEALING OF ACUTE TENDON INJURY FOLLOWING ALCOHOL CONSUMPTION: A PRELIMINARY STUDY**

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**Background:** Prior studies suggest that acute ethanol consumption adversely affects the tissue response to trauma by directly inhibiting fibroblast proliferation and function during wound healing.

**Objectives:** This study investigated the effects of virgin coconut oil (VCNO) on the morphology and antioxidant parameters in the healing tendon following an acute injury in rats that had prior alcohol consumption.

**Methods:** Fifteen male rats, randomised into three groups underwent induced crush injury to the left Achilles tendon. Groups 2 and 3 had prior administration of 30% ethanol daily for six days. The three groups were allocated as control (Group 1), received no treatment (Group 2), and received VCNO daily (Group 3). VCNO was commenced immediately post-
injury and given daily over the first 6 days. The animals were sacrificed on day 20 post-injury and the tendons were excised, and processed for histology and anti-oxidant assay.

**Results:** The tendons in group 2 showed disordered collagen formation with neutrophilic infiltrates and high tenoblast population 20 days post-injury while the VCNO treated tendon had dense, well-ordered parallel collagen deposits with fewer tenoblasts. VCNO significantly improved the tendon antioxidant parameters and lowered the MDA compared with the alcohol-fed untreated tendon (p<0.05).

**Conclusion:** VCNO was able to promote the healing of acute tendon injuries by ameliorating the effect of alcohol on the healing tendon.

**Keywords:** Virgin coconut oil, tendon injury, alcohol, anti-oxidants, tenoblasts

15/CLS/O2

**DEVELOPMENT AND EVALUATION OF A NEW INSTRUMENT TO QUANTIFY THE DEEP TENDON REFLEX IN THE ADULT AND ELDERLY**

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**Introduction:** Deep tendon reflex (DTR) is routinely used to evaluate the nervous system. Several scales and instruments have been developed, to clinically evaluate DTR. The majority of which are not easily accessible, highly cumbersome, and capitally intensive. Therefore, this study was designed to develop a less cumbersome, cost effective and easily accessible instrument that can objectively quantify DTR.

**Materials and Methods:** A total of 74 apparently healthy individuals and five (5) hemiplegic patients participated in this cross-sectional analytical study. The hemiplegic participants were recruited (from Lagos University Teaching Hospital) to determine the criterion-related validity of the device. The apparently healthy participants were recruited on sample of convenience from elderly religious gathering in Lagos and were assigned into groups according to their age. A simple DTR device was fabricated in the department of Biomedical Engineering department. Patellar tendon reflex was elicited by tapping on the most sensitive portion of the patellar tendon. The angle of knee excursion produced after patellar tendon tapping was recorded using the newly developed device. For the participants who failed to respond to the initial patellar tendon tapping Jendrassik maneuver was introduced. Pearson correlation was used to determine relationship between variables, at P <0.05.

**Result:** The device demonstrated good face and criterion-related validity coupled with high test-retest and inter-rater reliability with coefficient of 0.74 and 0.86 respectively. There was no significant different between the patellar tendon response for the right and left lower limbs. (p>0.05) Similarly, sex and age has no significant effect on the patellar tendon reflex response respectively (p>0.05).
Conclusion: The newly developed instrument for measuring DTR is valid. Findings of the study are comparable with previous study that age, sex, and handiness had no significant effects on the DTR response. This less expensive and less cumbersome device can therefore be used by clinicians to assess DTR.

Keywords: Deep tendon reflex, Patellar, Sex, Age, handiness

15/CLS/03

ASSESSMENT OF RADIATION DOSE TO RADIOGRAPHERS MOVING INTO THE TREATMENT ROOM AFTER EACH TREATMENT FRACTION USING A COBALT-60 TELEThERAPY MACHINE - IS THE DOSE SIGNIFICANT?

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Background
Owing to allied fear, an investigation has been carried out to access whether radiographers receive considerable amount of dose when moving into the treatment room after a patient have just been treated using a Cobalt-60 teletherapy machine. The study was conducted in a radiotherapy department designed for the treatment of cancer patients with a Theratron Phoenix Cobalt 60 teletherapy machine. A RadEye B20-ER Multi-Purpose Survey Meter was used to measurement dose rate at various points within and outside the treatment room.

Objective
To determine the effective dose rate received by radiographers after each treatment fraction at the isocenter, 10cm from the isocenter, 20cm from the isocenter and at the control console room respectively and to compare these results with set standards.

Methods
A RadEye B20-ER Multi-Purpose Survey Meter was positioned at the isocenter, 10cm from the isocenter, 20cm from the isocenter and at the control console room respectively. Although, our patient was mimicked using a phantom. Treatment planning procedures were followed and corresponding dose rate were measured by setting the survey meter to read just immediately after treatment.

Results
The average dose rate after treatments at the isocenter, 10cm from the isocenter, 20cm from the isocenter and control console room were 0.84µSv.h⁻¹, 0.42µSv.h⁻¹, 0.28µSv.h⁻¹ and 0.23µSv.h⁻¹ respectively.

Conclusion
The values obtained were less than the recommended maximum dose rate limits of 7.5µSv.h⁻¹ for controlled areas. This study showed that radiographers were save to move into the treatment room immediately after each treatment fraction had been administered.

Keywords: Cobalt-60 teletherapy machine, Radiographer, Survey meter, Isocenter, Dose rate
DESIGN AND OPTIMISATION OF A WATER COOLED ANTENNA FOR MICROWAVE ABLATION USING FINITE ELEMENT METHOD

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Background: Hyperthermia is a technique for treating cancerous tissues with the application of heat. Some cancers are located such that they cannot be successfully treated with conventional external radiation beam techniques. Microwave ablation is currently an alternative option being considered for the treatment of unresectable tumors.

Objective: To design water cooled microwave antenna for tumor ablation.

Materials and Methods: The water cooled antenna for hepatic microwave ablation was designed using Finite Element Methods (FEMs) (COMSOL MULTIPHYSICS® version 4.4). Finite element methods were used to generate the electromagnetic (EM) field and thermal distribution in liver tissue. The water slot position, water slot length and the antenna slot length, from the tip of the probe (z = 0 mm) were varied within the ranges (43 ≤ z ≤ 60 mm), (1 ≤ z ≤ 10.5 mm) and (1 ≤ z ≤ 20 mm) at 1 mm, 0.5 mm and 0.5 mm interval respectively, using a frequency of 2.45 GHz.

Results: The design has reflection coefficient -25.5dB, with 94.0% power dissipation into the tissue, and increase in ablation width of 5.0 cm at 120 W for 420s. The inclusion of a cooling unit reduced the backward heating of the shaft by 11.4%.

Conclusion: Findings indicate that the water cooled antenna is able to deliver high power to ablate large tumors up to 5 cm in one session.

Keywords: Microwave Tumor ablation, Cancer, Reflection coefficient, Water cooled antenna.

SUBSTANCE ABUSE AMONG OUT OF SCHOOL YOUTHS IN MOTOR PARKS IN LAGOS STATE

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Background: Substance abuse is a contemporary global problem and young people especially out of school youths constitute a high risk group.

Objectives: This study focused on determining the knowledge, prevalence and factors associated with substance abuse among out of school youths in Lagos, Nigeria. The substances considered in the study were alcohol, tobacco and cannabis.

Methods: A sample of 350 out-of-school youths selected from seven motor parks in Lagos State using a multi-stage sampling technique was analysed in this descriptive cross sectional
study. Interviewer-administered questionnaire was used to collect data. Thereafter, SPSS version 23 was utilised in data analysis.

**Results:** Out of the total sample population, the male to female ratio was 9:1. The mean age of the respondents was 20.76 ± 3.4 years. The study revealed that 33.4% of the respondents had poor knowledge regarding substance-related health risks. Prevalence of substance abuse was found to be 53.1%. Mean age of onset of substance abuse was 14 years. Peer pressure, stress relieve and fun were the major instigators of substance abuse. Factors significantly associated with substance abuse were: age, gender, religion, education and knowledge of substance-related health risks.

**Conclusion:** The study showed poor knowledge regarding substance-related health risks among respondents. Prevalence of substance abuse was high with alcohol, tobacco and cannabis in that order been the most abused substances. The findings of this study suggest that preventive educational campaigns and policies to curb the high prevalence of substance abuse are necessary to stem the ugly trend.

**Keywords:** out-of-school youths, substance abuse

15/CLS/06

**HEALTH SEEKING BEHAVIOUR PATTERN OF UNDERGRADUATE STUDENTS OF THE UNIVERSITY OF LAGOS**

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**Objective:** To study the health seeking behavior of undergraduate students of university of Lagos and determine the factors that influence it.

**Study Design and Methodology:** The research is a descriptive cross sectional study with a multistage sampling procedure with which a sample size of 385 respondents was selected. A self administered structured questionnaire was used to collect data and the software- Epi. Info 6.04 was used to analyse it. **Results:** When respondents fell ill, 29.5% of them chose proper modern medical care as first treatment option whereas 70.5% chose other methods of health care. The statistically significant factors that affected the health behavior of respondents were gender and mother’s educational level; the male was 3× more likely to engage in regular physical activity and 2.5× more likely to drink alcohol than the female. Respondents whose mothers are not educated were less likely to use condom during sexual intercourse and more likely to have a past history of multiple sex partners than those whose mothers are educated. Regarding treatment behavior, respondents whose mothers are not educated would more likely patronise the services of alternative medicine providers as a first treatment option (when ill) than those whose mothers are educated.

**Conclusion:** Mother’s educational level had the most significant influence over health seeking behavior of respondents among the factors considered.

**Keywords:** Health Seeking Behavior; Undergraduate Students.
THE ROLE OF ULTRASONOGRAPHY IN THE DIAGNOSIS OF HYDROS FETALIS: A CASE REPORT

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The objective of this report was to show the role of ultrasonography in the diagnosis of hydrops fetalis. Sonographic assessment revealed that there was increased amniotic fluid with hyperplacentosis. Transonic fluid interface was noted in the fetal abdomen in keeping with fetal ascites. There was bilateral pleural effusion with obvious subcutaneous scalp edema and right scrotal hydrocele. Ultrasound imaging is very effective and adequate in diagnosis of hydrops fetalis.

Keywords: Hydrops, fetalis, ultrasonography, Hydrocele, diagnosis.

EVALUATION OF INFECTION CONTROL MEASURES AMONG PRACTICING RADIOGRAPHERS IN MAIDUGURI, NORTH EAST NIGERIA

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Infection prevention and control is a global concern in health care practice and delivery. In consonance with international best practice, consolidated, explicit and conscientious measures should be inculcated to avoid further spread of infection among medical and health workers. This study is aimed at evaluating the knowledge, attitudes and level of practice of infection prevention and control measures among practicing radiographers in a metropolis in North east Nigeria. A total of 37 practicing radiographers filled and returned questionnaire from the Hospitals within Maiduguri Metropolis between April to September, 2014. A prospective, cross-sectional and descriptive study was employed in this study; descriptive statistical tool was used to generate frequencies and percentages. In occupational training program regarding infection control on blood and body fluids section, only 16.2% (n=6) had occupational training out of the participants. Majority of the respondents 70.3% (n=26) and 51.4% (n=19) do not often wash their hands before and after touching the patients respectively. 83.8% (n=31) use gloves and coats, 43.2% (n=16) do not often wear mask, eye protector and or respirator and 86.5% (n=32) disinfect cassette before use. These study shows that the use of gloves, coats and disinfecting cassette before use were good. Majority of the respondents 97.3% (n=36) have knowledge of standard precaution on how to protect both the patient, the radiographer(s). 75.7% (n=28) had knowledge of standard precaution on the use of gloves. Only 13.5% (n=5) have knowledge
of risk of splashes or spray of blood and body fluids and 51.4% (n=19) had knowledge of hands washing with alcohol-based hand rub. There was also no association between the practice and knowledge of infection control measures. In conclusion, this study reveals that the radiographer’s practice and knowledge regarding infection control and standard precaution were good. But the study recommended the need for training and retraining on infectious control and practice.

**Keywords:** Infection, Knowledge, Practice, Radiographers, Control.

15/CLS/09

**IMPACT OF SOCIO-ECONOMIC STATUS ON FUNCTIONAL DISABILITY AND QUALITY OF LIFE OF INDIVIDUALS WITH KNEE OSTEOARTHRITIS IN SOUTH-WEST NIGERIA**

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**Introduction:** Knee osteoarthritis (OA) is a common cause of disability but little is known about the impact of Socio-Economic Status (SES) on its health outcomes in Nigeria. This study sought to determine the impact of socio-economic status on the functional disability and quality of Life (QoL) of individuals with knee osteoarthritis in South-West Nigeria.

**Method:** A total of 258 individuals with OA recruited from physiotherapy departments/clinics in selected health facilities in South-West Nigeria participated in the study. The WOMAC Index, Kuppuswamy’s SES scale and WHO QoL Bref were used to assess the functional disability, the SES and the QoL of the participants respectively. One way analysis of variance and Pearson Product Correlation were used to analyse the variables. The level of significance was set at p<0.05.

**Results:** There was a significant difference in the QoL of the participants across the socio-economic strata (p<0.05). Participants in the low socio-economic class exhibited the least mean QoL scores (58.19±17.00) and highest functional disability score on the WOMAC scale (42.12±14.51).

**Conclusion:** Low socio-economic status is associated with decreased QoL and functions in individuals with knee OA in south-west Nigeria.

**Keyword:** Socio-economic status, Functional disabilities, Quality of Life, Osteoarthritis, South-West Nigeria
EFFECT OF STABILISATION EXERCISE ON PAIN AND QUALITY OF LIFE OF PATIENTS WITH NON SPECIFIC CHRONIC LOW BACK PAIN

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Background /Objective: Quality of life is a broad concept incorporating an individual’s physical health, psychological state, level of independence, social relationships, and personal beliefs in relation to salient features of the environment. The quality of life in patients with chronic low back pain is lower in comparison with general population and even in comparison with the quality of life in patients with other chronic diseases. This study was designed to assess the effect of stabilisation exercises on the quality of life of patients with non-specific chronic low back pain (NSLBP).

Methodology: A total of 23 patients (27-65 years) with non-specific chronic low back pain were recruited for this study from the Orthopaedic clinic of Lagos University Teaching Hospital (LUTH), Lagos Nigeria. They were put through core stabilisation exercises twice weekly for 4 consecutive weeks and assessed with the World Health Organisation Quality of Life (WHO QoL) questionnaire and verbal rating scale (VRS) at baseline and at four weeks post treatment intervention. Ethical approval was sought and obtained from the health research and ethics committee of Lagos University Teaching Hospital. Student’s t-test and Wilcoxon’s signed rank test were used to compare variables while Pearson moment correlation coefficient was used to determine the relationship between physical characteristics and quality of life domains as well as pain. The level of significance was set at p < 0.05.

Results: Patients recorded significant reduction in pain severity following intervention (p=0.01). There was also significant improvement in the Quality of Life domains (psychological health and social relationship) (p=0.01) post intervention and only age correlated directly with social relationship of the quality of life domain. (r=0.59,p=0.01).

Conclusion: This study concluded that stabilisation exercise improved pain and psychological health as well as social relationship domains of the quality of life of patients with non-specific chronic low back pain.

Keywords: Stabilisation, Quality of life, Non-specific low back pain
GENETIC VARIANTS OF PLATELET GLYCOPROTEIN RECEPTORS AND STROKE RISK IN CHILDREN WITH SICKLE CELL ANAEMIA

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Background
Platelets are activated at the sites of tissue damage, adhering to the sub-endothelial collagens via platelet glycoprotein receptors. However, inappropriate platelet activation and adhesion can lead to thrombosis and stroke.

Objective: This study investigated the association of platelet glycoprotein Ia (rs1126643) and IIIa (rs5918) polymorphisms with stroke risk in children with sickle cell anaemia (SCA).

Methods: One hundred and thirty-one children (2-16 years) with SCA were recruited into this study and were screened for stroke risk using non-invasive and non-imaging Transcranial Doppler ultrasonography, which measured time-averaged mean of maximum velocities in the middle cerebral and internal carotid arteries of the brain. Fifty-nine age-matched Hb AA children were used as the control group. Amplification refractory mutation system was used for genotyping DNA samples obtained from the study participants.

Results: Homozygosity for GpIa T allele was 9.8% among SCA subjects while none was observed in the control group. The frequency of platelet glycoprotein Ia (GpIa) T allele was higher in SCA subjects compared with the control (28.0% vs. 10.0%), bringing about a significant association between GpIa T allele and SCA subjects with standard stroke risk ($X^2= 13.43$, OR= 3.94, 95% CI= 1.83-8.46; p-value = 0.0002) and high stroke risk ($X^2= 11.66$, OR=3.29, 95% CI =1.62-6.68; p-value = 0.0006). However, the frequency of PLA1 and PLA2 alleles in Gp IIIa among the SCA subgroups and the control did not show any significant association.

Conclusion: The 807T variant of glycoprotein Ia might be an independent risk factor for stroke development in children with SCA in Lagos, Nigeria.

Keywords: Genetic polymorphisms; Platelet glycoprotein receptors; stroke risk; sickle cell anaemia.
EFFECTS OF AEROBIC EXERCISE ON THE PULMONARY FUNCTION, RESPIRATORY SYMPTOMS AND PSYCHOLOGICAL STATUS OF PEOPLE LIVING WITH HIV

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Background/Objective: Pulmonary complications, respiratory symptoms and depression are common occurrences which contribute to the morbidity and mortality seen in individuals living with HIV/AIDS. This study investigated the effects of aerobic exercise on the pulmonary functions, respiratory symptoms and psychological status of people living with HIV.

Methods: Forty eligible individuals (25 females and 15 males) with HIV aged 18 years and above participated in this study but 33 of them (23 females and 10 males) completed it. They were recruited from the HIV/AIDS Prevention and Intervention Initiative (APIN) clinic, Lagos University Teaching Hospital and were randomly assigned to either the study or the control group. The study group received aerobic exercise training three times a week for six weeks and counselling while the control group received only counselling on HIV and the benefits of physical exercises. Pulmonary functions, respiratory symptoms and depression were evaluated at baseline and at six weeks. Inferential statistics of paired and independent t-test were used to data analysis.

Results: With the exception of the respiratory rate (RR), there were significant improvements in pulmonary functions [Forced Expiratory Volume in one second (FEV1): p=0.001, Forced Vital Capacity (FVC): p=0.001, Peak Expiratory Flow (PEF: p=0.001] of the study group. There were also significant reductions in the respiratory symptoms (p=0.001) and depressive symptoms (p=0.001) of the study group while no significant improvement was observed in the parameters of the control group.

Conclusion: Aerobic exercise training significantly improved pulmonary functions as well as significantly reduced respiratory and depressive symptoms in people living with HIV/AIDS.

Keywords: Aerobic exercise, pulmonary, psychological status, HIV
A CROSS SECTIONAL STUDY OF CORRELATION BETWEEN PSYCHOLOGICAL DISTRESS AND EATING DISORDERS AMONG YOUNG ADULTS IN TERTIARY INSTITUTIONS IN LAGOS

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Background: In spite of recent surge in the available information on eating disorders (ED) globally, there is still dearth of information on ED among Africans. Closely related are indications in support of considerable psychological morbidity among people with eating disorders from existing literature. This study is aimed at investigating the relationship between ED and psychological distress among young adults.

Methodology: A total of 1054 young adults were recruited from two Lagos based tertiary institutions. All participants were interviewed with a designed questionnaire, Eating Attitudes Test (EAT-26) and General Health Questionnaire version 12 (GHQ-12) to elicit their socio-demographic profile, eating disorders symptomatology and psychological distress. Data were analysed using SPSS-20.

Results: The mean age of participants was 21.38(±3.66) years and majority were males (53.2%, n=1009). Most of the participants (96.3%, n=1046) reported been single. A total of 169(16%), screened positive for eating disorders using EAT-26 and about one third (32.5%, n=1054) had psychological distress based on a cut-of score of 3 on GHQ-12. Been in the second decade of life (age ranged 21-30 years and female gender) were significantly related to report of eating disorders symptomatology (p<0.05). Following regression analyses, psychological distress (Odd Ratio [OR] =1.633; 95% Confidence Interval [95% CI] =1.16, 2.28; p=0.004) was independently related to significant symptoms of eating disorders.

Conclusion: Our findings suggest that eating disorders symptoms were more likely to be profiled among young adult females and associated with significant psychological morbidity. Further attention including research based efforts on eating disorders is implied.

Acknowledgements and Disclosure: This work was funded by the University of Lagos central research committee TETFUND grant. (Grant Number: CRC/TETFUND/No 2011/15)

Keywords: Psychological distress, Eating disorders, Correlation, Confidence interval
EXERCISE, RECREATION AND SPORT PARTICIPATION AMONG LECTURERS IN UNIVERSITY OF LAGOS

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Introduction: Physical inactivity is an independent modifiable risk factor for common non-communicable disease which is the major cause of death and disability worldwide. Non-communicable diseases cause more than 35 million deaths in 2005. This study therefore aimed to determine activity at work, transportation, recreation activities, sedentary behavior and knowledge and attitude towards exercise participation among University of Lagos Lecturers.

Methods: Three hundred and sixteen subjects participated in this cross-sectional survey. The Subjects were lecturers of the University of Lagos. All subjects were evaluated using a 33 item questionnaire which sought information on demographic data, activity at work, transportation, recreational activity, sedentary behavior, knowledge and attitude towards exercise. Data was analysed using statistical package for social science version 21 and summarised with pie charts, tables and figures.

Results: Sixty nine (69) percent of the respondents were willing to know more about exercise, health promotion and disease prevention. Two hundred and fifteen (68.00%) of the respondents were males while 97(30.70%) were females. 52% did not walk or use Bicycle as means of transportation, 60.4% of the respondents were not aware of the recommendations. Majority (49.4 %) of the respondents considered age not to be a barrier; 46.2% of the respondents considered giving priority to other activities as somewhat a barrier while 44.9% considered time constraint as serious barrier.

Conclusion: This study revealed that lecturers of the University of Lagos have low participation in exercise, recreation and sports which is associated to high risk of cardiovascular disease and other Non Communicable Diseases. Lecturers are significantly influenced from not participating in exercise, recreation and sport by lack of facilities, tight schedule, fatigue and physical exhaustion.

Keywords: Physical activity, sedentary, academic staff

COMPARATIVE EFFICACY OF TWO PHYSIOTHERAPY APPROACHES IN RESTORING FUNCTIONAL PERFORMANCE IN INDIVIDUALS AFTER ABDOMINAL SURGERY: A CLINICAL CONTROLLED STUDY

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Background: The ultimate goal of surgery is to return the patient to as near pre-morbid functional performance as possible and to limit or prevent complications. Various studies
have examined the effect of pulmonary rehabilitation techniques on respiratory function post-operation; however, there is paucity of data on recovery of functional performance post abdominal surgery.

**Objective:** To compare the efficacy of spirometry and chest-physiotherapy approaches in restoring functional performance in individual’s after abdominal surgery.

**Methods:** This study involved 90 individuals (randomised into 3 groups of 30), who had abdominal surgery in a Nigeria Tertiary Health Institution. Group 1 received chest-physiotherapy; group 2 received incentive-spirometry and group 3 received the combination both approaches. Functionality was assessed using 10-Meter Walk Test (10MWT) and Barthel Index activity of daily living questionnaire (BI) while a spirometer was used to assess Forced Vital Capacity (FVC) and Force Expiratory Volume one-second (FEV1). The BI, FEV1 and FVC were assessed at 24-hour pre-operation, and 24-hour, 3rd-day and 7th-day post-surgery while 10MWT was assessed at 24-hour pre-surgery and 7th-day post-surgery. Data was analysis with Analysis of Variance and Kruskal-Wallis test.

**Results:** Eighty-seven participants completed the study while 3 died. The groups were matched in all the variables at the pre-operation stage. There was drastic reduction in BI, 10MWT, FEV1 and FVC scores at immediate 24-hour post-surgery but increased rapidly throughout the 7-day period. The group who received the combined therapy performed significantly better (p<0.05) in 10MWT at 7th day post-operation. There was no significant difference (p>0.05) in the BI, FEV1 and FVC among the groups at the 3rd and 7th days post-operation.

**Conclusion:** Abdominal surgery cause remarkable decline in functional performances. Early and monitored chest-physiotherapy and spirometry result in rapid improvement in functional performance in individuals within a week of the surgery. However, the combination of the two approaches yields better result in improving functional performances.

**Keywords:** Abdomen, Surgery, Spirometry, Chest-Physiotherapy, Function.
Methods: This study involved 43 stroke survivors on out-patient physiotherapy. They were randomised into three (bicycle ergometry, treadmill or over-ground walking exercise) groups. Each participant received routine physiotherapy in addition to the exercise training in the group they belonged for one and half hours, twice a week for 8 weeks. Baseline and post-training measurements were: resting heart rate (RHR), maximal heart rate (MHR), 10-meter walk time (10MWT), 6-minute walk distance (6MWD) and exercise blood pressure at submaximal workload (BPMWL). Their societal integration was quantified by calculating the number of hours of participation in community activities and return to work. Data was analysed with Paired t-tests and Analysis of variance.

Results: The 10MWT values significantly improved (p<0.05) in both the treadmill and over-ground walking groups and non-significantly (p>0.05) in the bicycle ergometer group. The 6MWD significantly improved (p<0.05) in all the groups. The over-ground group followed by the treadmill group performed non-significantly better in the walking speed and endurance and in societal integration.

Conclusion: Aerobic exercises are effective in improving gait and cardiorespiratory functions and promoting societal integration after stroke. However, over-ground walking followed by treadmill is clinically better than the bicycle ergometer in improving functional performances and societal integration.

Keywords: Stroke survivors, Societal Integration, Stroke rehabilitation, Productivity

15/CLS/17

KNOWLEDGE AND PATTERNS OF MANAGEMENT OF CHRONIC PAIN AMONG RESIDENTS OF BADAGRY LGA OF LAGOS STATE

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Background:
Pain is still a major global health problem with priority towards alleviation. An estimated 20% of the world’s adult population suffers from pain with a variety of orthodox and complementary alternative strategies being employed in management.

Objective:
We set to assess the knowledge and patterns of management of chronic pain among the residents of Badagry LGA of Lagos State.

Methods:
This was a cross-sectional descriptive study among 365 consenting residents, which collected data on their knowledge and experience of pain, methods of management and factors influencing their decisions. Data was analyzed using Epi info version 7 and presented as tables and charts. Associations were demonstrated using chi square at p < 0.05.
Results: Respondents had a mean age of 34.4 ± 11.9 years, male (58.1%), Christian (78.4%), and Yoruba (67.1%). Majority (62.7%) had chronic pain mostly in the back and lower limbs (49.3%). Over half (52.0%) treated themselves with OTC pain relief, gone to hospital (43.2%), or used folk remedy (agbo) (43.7%).

Conclusion: Chronic pain is a problem in the community, with significant use being made of folk remedy (agbo) in the management of chronic pain. Increased awareness about the detriments of inappropriate medication is recommended.

Keywords: Knowledge, management, chronic pain

15/CLS/18

INFRARED RADIATION KILLS WOUND PATHOGENS

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Background: Infected wounds constitute a major cause of healthcare concern and are difficult to treat due to the emergence of drug-resistant bacteria. In the course of his clinical practice, CBA, one of the researchers, found that a number of patients with infected wounds were treated with infrared radiation (IRR) and responded with remarkable healing than could be explained by its known ability to elicit increased local blood circulation. It was thought that IRR could have some bactericidal effect.

Objective: This study was undertaken to evaluate the novel antimicrobial approach involving photoactivating localised photosensitisers of bacterial cells using radiation from an IRR lamp (150W; 220-240V).

Methods: Suspension of Staphylococcus aureus, Streptococcus pyogenes, Pseudomonas aeruginosa, Klebsiella pneumonia and Escherichia coli was transferred into an empty Petri dish with the aid of micropipette. The open Petri dish containing bacterial suspension was then taken immediately to wooden box enclosing an affixed IRR lamp where each suspension was irradiated separately for 5, 10, and 15 minutes. Subsequent dilution of each of the irradiated suspensions was cultured on blood agar and incubated at 35°C for 20-24 hours.

Results: All species were susceptible to killing. IRR dose of 1585.90J/cm² enabled the killing of Gram-negative species (K. pneumoniae, P.aeruginosa & E.coli); higher intensity IRR of 2378.35J/cm² was required to achieve a substantial kill of the gram-positive species (Staph. aureus & Strep. pyogenes). Both low and high IRR doses (1585.90J/cm² & 2378.35J/cm²) were able to kill large proportions (96.9%-100% of suspension containing 10⁸ CFU/ml) of Gram-negative, High intensity IRR (2378.35J/cm²) was necessary to kill 99.4% Gram-positive bacteria while very high dose of 3171.89J/cm² achieved 100% killing of all the bacterial species. A comparison of log numbers of Staphylococcus aureus, Streptococcus pyogenes, Pseudomonas aeruginosa, Klebsiella pneumonia and Escherichia coli between the control and the experimental groups with IRR dose of 2378.35J/cm² showed a significant difference at P<0.05.
Conclusion: The result of this research work implies that lethal photosensitisation using Infrared radiation could be an effective means of decreasing the microbial burden in wounds. Physiotherapists and other clinicians now have an additional armamentarium in clinical management of wounds. This finding should stimulate further research aimed at standardising both technical and required procedural steps for quality healthcare delivery

Keywords: infrared radiation, infected wounds, pathogens.

15/CLS/20

EFFECT OF PREDATOR-INDUCED PSYCHOSOCIAL STRESS ON IMPLANTATION AND PREGNANCY OUTCOME IN RATS

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Maternal stress is commonly cited as a potential cause for at idiopathic pregnancy loss. However, the mechanisms through which stress affects implantation and pregnancy are yet to be totally deciphered. This study, therefore, was designed to determine the effect of predator-induced psychosocial stress on implantation and pregnancy in rat. Cycling rats (n=48) at proestrus phase were paired overnight with sexually experienced male in ratio 2:1. Following mating confirmation in the morning, rats were registered to be on day one of pregnancy and randomly assigned to either control (n=24) or stress (n=24) group. Stress was induced by exposing rats to cat for 60 minutes/day for 14 consecutive days. Subsequently, six animals from each group were sacrificed on days 6, 8, and 19 following which blood was collected through cardiac puncture for hormonal analysis. The remaining six animals in each group were allowed to deliver at term. Number and weight of implantation sites (IS) detected by intravenous injection of Evans blue dye, and litter size were then recorded for statistical analysis. Results reveal significant (P<0.05) reduction in number of IS on day 6 and 8 compared with control. Mean weight of IS on day 8 compared with day 6 was significantly reduced in stress group and corresponding days in control. Similarly, there is significant (P<0.05) reduction in the number of fetuses on day 19 and litters at term compared with their corresponding control but no significant difference between stress groups. Hormonal analysis reveals significant (P<0.05) elevation of corticosterone in the stress group compared with control, especially on day 8. Progesterone-estradiol ratio was significantly (P<0.05) reduced on day 8 compared with day 6 and corresponding control groups. Prolactin concentration was also significantly (P<0.05) reduced in stress group compared with control. Besides, mean length of gestation was significantly (P<0.05) extended in the stress group compared with control. This study suggests that elevated corticosterone level, secondary to stress exposure, is involved in peri-implantation and intra-uterine growth restrictions resulting from stress-induced hormonal perturbation.

Keywords: stress, implantation, corticosterone, intrauterine growth restriction
PATTERN OF ASSAULT-RELATED MAXILLOFACIAL INJURIES TREATED AT ORAL AND MAXILLOFACIAL UNIT OF GENERAL HOSPITAL, LAGOS

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Introduction
The human face often constitutes the first point of contact in various human interactions and it is frequently the preferred target for blows in assault cases. These injuries may cause serious functional, psychological, physical, and cosmetic disabilities. The aetiology of maxillofacial injuries varies from one country to another and even within the same country; it depends on the prevailing socioeconomic, cultural, and environmental factors. Some of the causal factors of these injuries include: road traffic accidents, interpersonal violence/homicidal injuries, domestic accidents, falls, gun-shots, bomb blasts, industrial accidents and other work/occupational related injuries, sports related injuries, animal injuries, suicide, earthquake, and iatrogenic injuries.

Material and Method
A one year prospective study of assault-related maxillofacial injuries treated at the Department of Oral-Maxillofacial Surgery, Dental Centre General Hospital Lagos was undertaken. A face-to-face interviewer-administered structured questionnaire was used to obtain information from study subjects.

Result
Thirty-three patients with maxillofacial injuries met the inclusion criteria for this study. Their age ranged between 16 and 48 years with a mean age of 28.2 ± 7.4 years (Table 1). There were 25 males and 8 females with a male-to-female ratio of 3:1 (Figure 1). Majority, 24 (72.7%) of the patients did not have any skilled employment and the remaining 9 (27.3%) were road transport workers specifically commercial bus drivers and motorcycle riders. The most common cause of the assault-related injuries was altercations; which accounted for 29 (87.9%) of the aetiology for all patients in this study and was most frequently as a result of facial blows (Figure 2).

Discussion
In this study, the most common mechanism of assault for maxillofacial injuries was due to blunt object as shown in figure 2. Previous investigations have linked the mechanism of assault with the type of injury, and suggested that attacks with blunt objects can generate enough forces to cause fractures, particularly, leading to dento-alveolar fractures of the jaws. In the present study, forces generated through impacts from blunt object produced fracture of the mandible as shown in Figures 5&6. There is a stark difference in the etiology of maxillofacial trauma in developing and developed nations. The common cause of maxillofacial trauma in developing countries is RTAs, while assault is the most common cause in developed countries, as shown figure 3.
**Conclusion:**
Our study presents individuals with assault-related maxillofacial injuries to be mostly young adult males who are not skillfully employed shown as in table 2. This finding could be attributed to the increased disposition for violence in males our environment. This is possibly due to the level of illiteracy and unemployment amongst this gender and age group.

*Keywords:* Pattern, assault-related, maxillofacial injuries, general hospital.

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**IMPACT OF COMMON ORAL HEALTH CONDITIONS AND THEIR TREATMENT ON THE QUALITY OF LIFE OF PRESCHOOLERS IN LAGOS, NIGERIA**

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**Background:** The consequences of oral health conditions in preschoolers are of significant interest, affecting the child and the parents/caregivers quality of life. The aim of the study was to evaluate the impact of common oral health conditions and their treatment experiences on the quality of life of young children and their parents/caregivers.

**Method:** A prospective interventional study was carried out on children aged 2-5 years and their parents in two hospitals in Lagos. Information about the impact of oral health on the childrens’ quality of life was obtained from parents/caregivers by means of interviewer administered Early Childhood Oral Health Impact Scale (ECOHIS) questionnaire. Data was analysed using Statistical Package for the Social Sciences. All comparisons of paired measurements (pre and post) were based on the paired t-test statistics.

**Results:** A total of 208 children participated in the study. One hundred and eighty-eight (90.4%) parents/caregivers reported one form of impact on their children’s oral health related quality of life. Acute herpetic gingivostomatitis and chronic marginal gingivitis had the greatest and the least negative impact, respectively on the quality of life of children. There was a reduction in the subjects’ total ECOHIS scores after treatment of their oral conditions.

**Conclusion:** Acute herpetic gingivostomatitis and chronic marginal gingivitis had the greatest and least negative impact respectively on the children’s quality of life. There was significant improvement in the oral health related quality of life of the children and their parents/caregiver after dental treatment.

*Key words:* Oral health conditions, preschoolers, ECOHIS, quality of life
EVALUATION OF WORK POSTURE AND PREVALENCE OF MUSCULOSKELETAL DISORDERS AMONG DENTISTS IN LAGOS STATE

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Background: Dentists spend their work hours performing extremely precise procedures in a small space (i.e. the patients' mouth), and dental work is typically characterised by postures with different degrees of distortion, prolonged static postures, repetitive movements, inadequate lighting, and vibrations.

Objective: To evaluate work posture and prevalence of work-related musculoskeletal disorders (WRMDs) among dentists in Lagos State.

Methods: A total of 47 practicing dentists (males = 25, females = 22) from two Teaching Hospitals within Lagos state, Nigeria participated in this cross-sectional study. Participants were required to complete a standard Nordic musculoskeletal questionnaire; thereafter their work posture was evaluated using Rapid Entire Body Assessment (REBA) tool. Chi-Square statistic was used to determine association among prevalence of WRMDs, REBA scores and anthropometrics.

Results: Prevalence of WRMSDs was 66.0%, with the low-back having the highest prevalence (51.1%). REBA scores indicated that most respondents (46.8%) were at Medium risk exposures to WMSDs. There was a significant association (p<0.05) between REBA scores and years of working experience; however there was no significant association (p>0.05) between REBA scores and the report of WMSDs.

Conclusion: Work-related musculoskeletal disorder, particularly low back pain, was a common problem among dentists. Awkward postures and sustained contractions can be contributing factors to these disorders. Therefore, interventions such as education on proper work posture and work-station ergonomics work posture may be essential to reduce risk factors.

Keywords: Dentists, work posture, WMSDs, prevalence, REBA.
UNDERGRADUATE DENTAL EDUCATION IN NIGERIA: PERCEPTIONS OF DENTAL STUDENTS AND RECENT DENTAL GRADUATES

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Background: Students’ perception of their education is a subject that has received very little attention by those providing dental school educations. This is more so in the Nigerian environment, where limited research has been carried out in dental education, particularly with respect to the students’ perspectives on the quality of training received.

Objective: Thus, the aim of this study was to determine the perceptions of dental students and recent dental graduates in Nigeria on their level of satisfaction with the quality of academic and clinical training received in their respective dental schools and the challenges faced in receiving this training.

Methods: This was a cross-sectional descriptive study carried out amongst 271 dental students and recent dental graduates from eight dental schools in the country. Ethical approval for the study was obtained from the Institutional Review Board of the Lagos University Teaching Hospital (LUTH). Data collection was via self-administered questionnaires. Statistical analysis was carried out using SPSS 17.

Results: The final study sample was made up of 239 students, with a mean age of 24.57 (2.21) years. The two dental specialties in which the least level of satisfaction was recorded with regard to the quality of academic training received were Conservative Dentistry and Orthodontics, while for clinical training they were Conservative Dentistry and Oral Biology/Pathology. The three most common factors which were adversely affecting the quality of clinical training received were poor electricity supply, insufficient dental chairs and quality of training received.

Conclusion: Dental students and recent graduates of Nigerian Dental schools are not satisfied with the quality of undergraduate training received in some dental specialties at their respective dental schools.

Keywords: Undergraduate Dental Education, Students’ perception-, Nigerian Dental schools.
MOLECULAR GENETICS INVESTIGATION OF HEARING DEFECTS IN NON-SYNDROMIC CLEFT LIP/PALATE IMPLICATES DAMAGING MUTATIONS IN GJB2 GENE

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Background: GJB2 gene mutations, GJB6 deletion, and the A1555G mitochondrial mutation have been implicated in hearing loss generally. Little is known about genetics of hearing loss in patients with cleft lip and palate.

Objective: The objective was to investigate the role of GJB2 gene mutations in the aetiology of hearing defects in non-syndromic cleft lip/palate.

Methods: Saliva samples were obtained from cases (subjects with orofacial clefts) and control (subjects without orofacial clefts) who consented to the study. DNA was extracted using standardised protocol at Butali Lab (Iowa, USA). Primers for the coding region of GJB2 was designed using Primer 3 (http://bioinfo.ut.ee/primer3-0.4.0/) and optimised in the Butali lab using a gradient Polymerase Chain Reaction (PCR) to determine the annealing temperature for each primer set (forward and reverse). We measured the DNA concentration using Qubit and XY genotyping done for quality control. A concentration of 5ng/ul of DNA was used for Sanger sequencing.

Results: A total of 150 subjects were sequenced (66 cases; 84 controls). Mutations in GJB2 gene were detected in 2 individuals with cleft lip/palate. We found p.Arg165Trp variant in one case and p.Leu81Val variant in the second case. Although p.Arg165Trp was predicted to be either benign or tolerated by SIFT/POLYPHEN, the single nucleotide change from C>T i.e. CGG>TGG leads to a premature stop codon preventing the protein formation. The p.Leu81Val variant was predicted to be probably damaging/ deleterious.

Conclusion: The present study implicates mutations in the GJB2 gene in the aetiology of hearing defects in non-syndromic cleft lip and palate in the Nigerian population. Screening of the affected parents may indicate whether the mutation segregates in the family or they are De-novo. This is important for genetic counseling especially in high-risk families.

Keywords: Genetics; hearing; orofacial cleft; case-control
CHILDREN WITH NON-SYNDROMIC CLEFT LIP/PALATE ARE MORE PRONE TO DEVELOPING MIDDLE EAR DYSFUNCTIONS THAN CONTROL SUBJECTS

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Background: Several authors have reported the presence of hearing defects in association with cleft lip and palate. Little is known about this topic in Nigeria and Africa.

Objective: The objective of the study was to evaluate audiological functions in subjects with cleft lip/ palate and compare with control subjects without cleft lip/palate.

Methods: Cases were children with cleft lip and/or palate (CLP) while controls were those without CLP. Each eligible subject had otoscopic examination and hearing screening tests which included middle ear analysis and pure tone audiometry.

Results: There were 69 cases and 83 controls. Only 59 of the controls completed audiometric screening. Of the 59 (118ears), only 1 subject (2 ears) failed middle ear function tests of the type B variety which indicated middle ear effusion, while about 3 ears (2.5%) failed the pure tone audiometry testing. Of the total of 69 cases recruited, 44 patients 64% failed the middle ear analysis with middle ear effusion Type B constituting over 90% in the right ears while 31 cases constituting 44% failed middle ear analysis in the left ear, and these failed evaluation cut across the various pathologies. A total of 36 (52%) cases were able to complete the pure tone audiometry with only one patient (2.7%) failing the test in both ears.

Conclusions: Middle ear dysfunction appears to be the more predominant otologic findings; anticipated hearing loss has not been shown to be of higher proportion than in the control group. Therefore, audiological and audiometry evaluation should be an integral part of multidisciplinary approach in the management of children with cleft lip and palate in Nigeria.

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Keywords: Audiology; dysfunction; cleft lip; cleft palate
EVALUATION OF SURGICAL OUTCOME OF UNILATERAL CLEFT LIP WITH TWO SURGICAL TECHNIQUES

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Background: Few studies in Nigeria have attempted to document the surgical management outcome of orofacial clefts however, there appears to be no reported study on comparison of the surgical outcome of unilateral cleft lip repair using two or more different techniques in this environment.

Objective: The objective of the study was to compare the treatment outcome following surgical repair of unilateral cleft lip using either Tennison-Randall (TR) or Millard rotation advancement technique (MR).

Methods: This was a prospective randomised controlled study conducted at the Lagos University Teaching Hospital, between January 2013 and July 2014. The subjects were randomly allocated to two surgical groups A and B. Group A had cleft repair with TR techniques, while group B had cleft repair with MR technique. The important landmarks on the upper were marked preoperatively. Surgical repair was carried out by two Oral and Maxillofacial Surgeons under general anaesthesia. Surgical outcome was assessed by using qualitative and quantitative methods.

Results: Of the 56 subjects, 32 (57.1%) were males, and 24 (42.9%) were females. Evaluation revealed that more nostrils were asymmetrical, more columellae were deviated and more alae were flattened in the Millard group than in the TR group. The Millard group showed a greater increase in the post-operative horizontal lip height and vertical lip height (P>0.05), while the Tennison-Randall group showed a greater reduction of the nasal width, total nasal width and the Cupid’s bow width (P>0.05).

Conclusion: The study did not find significant difference in the surgical outcome of the two techniques. The expertise of the surgeon and/or individual preference is a strong factor in selection of the technique of repair of unilateral clefts.

Keywords: Cleft lip; repair; outcome; technique
A COMPARATIVE STUDY ON THE KNOWLEDGE OF CLEFT LIP AND PALATE AMONG ANTENATAL ATTENDEES IN RURAL AND SUB-URBAN HEALTH FACILITIES IN LAGOS, NIGERIA

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Background: Several western countries have reported a low level of awareness and knowledge of the aetiology of cleft lip and palate (CLP) in their populations. Little is known about the knowledge of CLP in Nigeria.

Objective: The aim of the study is to compare the awareness and knowledge of oro-facial cleft among antenatal attendees at sub-urban and rural health facilities in Lagos state.

Methods: A cross-sectional descriptive study was undertaken on pregnant women attending the antenatal clinics in two rural and two sub-urban health facilities in Lagos state. Data was obtained by interviewer administered

Results: A total of 424 respondents participated in this study (one hundred and ninety seven respondents from rural facilities and 227 from Sub-urban facilities). Forty eight percent had tertiary education, while only 1.7% had received no form of formal education. Thirty percent were Professionals/ large scale business owners and 7.5% were petty traders/laborers. Of all the respondents 77.8% had not heard of cleft lip and 85.6% of cleft palate. A total of 61.7% and 54.1% of the respondents from the rural health facilities stated they had heard of cleft lip and palate respectively, while at the sub-urban facilities only 38.3% and 45.9% had heard of cleft lip and palate respectively.

Conclusions: The knowledge and awareness of orofacial cleft lip and palate was very low among antenatal attendees in this study. This may be responsible for the associated negative beliefs and attitude surround orofacial cleft in Nigeria. There is a need to include awareness about orofacial cleft in the health promotion programs targeting mothers attending antenatal clinics.

Keywords: Knowledge; antenatal attendees; orofacial cleft
KNOWLEDGE AND PERCEPTION OF MOTHERS OF CHILDREN WITHOUT OROFACIAL CLEFT ON CONGENITAL ORO-FACIAL CLEFTS

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Background: Socio-cultural and religious factors have been found to influence the concepts, perceptions and attitudes towards children with orofacial clefts.

Objective: The objective of the study was to evaluate the knowledge and perception of mothers of children without congenital orofacial cleft on congenital orofacial cleft.

Methods: The study was conducted among mothers of children (1 day – 3 months old) without any form of congenital orofacial cleft at the postnatal clinic of LUTH. The data were collected through a structured questionnaire. The questionnaire included information biodata of parents and babies, perceived cause of orofacial cleft, what to do if they have children with orofacial cleft, perceived remedies to the disorders, advice to mothers of cleft children and advise to cleft care team.

Results: A total of 135 mothers participated in the study period. Thirty-seven (27.4%) of the mother have not seen babies with orofacial cleft before while 72.6% have seen the deformity before; most of them (57%) in a health facility. 77 percent of the mothers attributed the cause of the disorder to self-medication, malnutrition and habits such as smoking and alcohol consumption. 11% thought it was hereditary while 3% believed it was caused by evil spirit. Most of the mother (77.8%) will carry the baby openly if they have baby with cleft. Most of the mother believed that surgical remedy is the main option.

Conclusion: Although most of the respondents have some knowledge about orofacial cleft, there is still a need to increase awareness campaign regarding aetiology of orofacial cleft and its prevention.

Keywords: orofacial cleft; knowledge; mothers; non-cleft
**Background:** The gingival sulcus is the shallow space or crevice around the tooth. Measurement of the depth of the gingival sulcus during periodontal clinical examination is an important diagnostic parameter and may indicate the presence of periodontal disease when it is increased. The average gingival sulcus (or probing) depth in health is reported to be generally less than 3 mm mostly among Caucasians.

**Objective:** To assess the depth of the gingival sulcus in a population of Nigerians, thus providing a reference value for Nigerians.

**Methods:** This was a cross sectional study by design. One hundred systemically healthy volunteers were recruited at the Periodontology clinic of the Lagos University Teaching Hospital. Their gingival status was assessed using the Gingival Index. Those with moderate/severe gingivitis and chronic periodontitis were excluded. Seventy three volunteers met the criteria and the depth of their gingival sulcus was measured on the facial surfaces of the teeth using a William’s periodontal probe (mm). Ethical approval was obtained from the Institutional Review Committee.

**Results:** Mean age of the subjects was 24.1 ± 3.6 years, 74% being females. Mean width of the gingival sulcus was 1.3 ± 0.4 mm (range of 0.6-2.3). No significant age, gender or ethnic differences were observed in the average depth of the gingival sulcus (P>0.05).

**Conclusions:** The average depth of the gingival sulcus in health among Nigerians appears to be within the range previously reported among Caucasians.

**Keywords:** Gingival sulcus, Depth, Nigeria

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15/DEN/11

**DENTAL UTILISATION AMONG SCHOOL AGED CHILDREN IN AN URBAN AREA IN SW NIGERIA**

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**Background:** Tooth ache is the most common reason for visits to the dentist and this is sometimes after self-medication has failed. Children are often in care of parents/guardians and are dependent on them for provision of life’s necessities including access health care services. Nigeria has a high unmet caries need and poor utilisation of dental services. This is study is aimed and determining possible reasons for poor utilisation of dental services.

**Materials and Methods:** A cross sectional study among school aged children in Ibadan, Oyo state Nigeria. A total of one hundred and eighteen assenting students with parental consent participated in study. Interviewer administered structured questionnaire was used to collect data. Data analysed using descriptive statistics and logistic regression at p=0.05

**Results:** The population comprised 50.8% females, 62.7% public school attendees and 52.5 % secondary school students. Mean age of respondents was 9.6±2.9. Forty five (38.1%) respondents had previous history of dental pain but only 11 (9.3%) had ever been to the
dentist. There was no significant association between experiencing pain and visit to the dentist. Twenty (54%) respondents reported having experienced pain and were given medication by their parents and not taken to the dentist while twelve (32.4%) reported parents being too busy to take them to the dentist.

**Conclusion:** Utilisation of dental services is low despite the obvious need and children who need dental treatment are not getting it because of parental attitude. General education on the need to utilise dental services is imperative.

**Keywords:** Dental services, Utilisation, Caries, School children

15/DEN/12

**IMPACT OF ORAL HEALTH ON THE QUALITY OF LIFE OF CLINICAL DENTAL STUDENTS IN A NIGERIAN UNIVERSITY**

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**Background:** Oral health-related quality of life characterises a person’s perception of how oral health influences his/her life’s quality and overall well-being. Dental students, as future oral health providers, are an important group being expected to be good role models for good oral health behaviour.

**Objective:** The aim of this study was to assess the oral health quality of life of clinical dental students of the University of Lagos, Nigeria.

**Materials and Methods:** Self-administered questionnaires were distributed to one hundred clinical dental students in a normal classroom setting. The questionnaire included questions from the shortened version of the Oral Health Impact Profile (OHIP-14). Data on self-rating of oral health, dental visit patterns and self-assessed dental needs was also collected.

**Results:** Sixty four clinical dental students responded. Mean age was 22.4±1.8 years. Only 17 (26.5%) of them reported an impact within the last year. The mean sum OHIP score was 11.38 ± 9.77. An impact was reported in the domain of psychological discomfort (20.6%) and physical pain (19.0%). Thirty nine (60.9%) rated themselves as having good oral health while 48.4% felt they needed dental treatment, mostly for malocclusion (48.3%). In the last one year, 65.6% of them had visited the dentist, with 59.9% visiting for preventive dental procedures.

**Conclusion:** This study has highlighted a relatively low impact of oral health on the quality of life of clinical dental students, which may be a reflection of their exposure to dental education. This encouraging finding continues to place them in a vantage position to motivate their colleagues and patients towards good oral health.

**Keywords:** Oral health, Quality of Life, Dental students
PERIODONTAL AND CHRONIC KIDNEY DISEASES: OPINIONS AND PRACTICES OF NIGERIAN NEPHROLOGISTS

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Background: Chronic Kidney Disease (CKD) is a global public health issue with hypertension and diabetes being the leading risk factors. Recent studies have demonstrated a bilateral link between periodontal disease (PD) and CKD.

Objectives: To determine PD knowledge, attitudes, oral hygiene and referral practices among Nephrologists and trainees in Nigeria.

Methods: This was a cross-sectional study in which 120 questionnaires were sent to Nephrologists and Nephrology trainees in Nigeria via their electronic mail between March and August 2015. The questionnaires had sections on socio-demography, knowledge of PD, PD link with CKD and other systemic illnesses, attitude, oral hygiene and referral practices.

Results: Fifty three nephrologists and trainees responded. Mean age was 38.7 ± 8.1 years with 41.5% in consultant cadre. About half (52.8%) had 1-5 years of clinical experience in nephrology. Oral health information was mostly from social media (52.8%) and the press (52.8%). Over 60% were knowledgeable about PD with positive attitudes towards periodontal care, but less than 50% knew PD to be a risk factor for CKD and poor glycemic control. Oral hygiene practices were unsatisfactory. Only 3.8% referred their patients with CKD to dentists regularly, while 51.9% had never examined their CKD patients’ oral cavity for signs of PD.

Conclusions: Nephrologists and trainees in Nigeria had positive attitudes towards PD, but had low awareness of PD as a risk factor for CKD and poor glycemic control. Unsatisfactory oral hygiene and referral practices were dominant. It is important to emphasise the role of periodontal health in the care of CKD patients among Nephrologists and trainees.

Keywords: Periodontal disease, CKD, Knowledge, Practices, Nephrologists
AN ASSESSMENT OF CHEMISTRY STUDENTS’ KNOWLEDGE/AWARENESS OF GLOBAL WARMING AND CLIMATE CHANGE IN LAGOS, NIGERIA

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The study was carried out to assess the knowledge/awareness level of Chemistry students on the issue of global warming and climate change in Lagos, Nigeria. Descriptive research survey design was utilised for the study. The sample consisted of 299 students chosen by random sampling. Students’ awareness level about global warming and climate change questionnaire (SAGCQ) with a reliability coefficient of 0.75 was used to collect data. Three research questions and corresponding hypotheses were tested at 0.05 level of significance. Chi-square statistics was employed for data analysis. Results obtained showed that the female and male students did not differ in their level of awareness on the issue of global warming. There was no significant difference in the action taken by male and female students to mitigate climate change/global warming. School type did influence students’ level of awareness. It was recommended that curriculum planners should make climate change/global warming a major topic instead of a sub-topic in the Chemistry curriculum for better awareness. Creation of awareness should start from the primary school and students should be made to carry out projects to mitigate this global menace.

Keywords: Global warming, Climate change, Knowledge/awareness, Chemistry, Lagos.

TRANSFORMING FOOD PRODUCTION THROUGH HYGIENIC MEAT PROCESSING IN ABATTOIRS IN NIGERIA

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Prevalence of food contamination and poisoning from unhygienic practices in food industry demands urgent attention to improve food security especially with need for essential protein, reduce morbidity and mortality among meat consumers in conformity with Millennium/Sustainable Development Goals (M/SDGs). However, the need to examine slaughterhouses and meat outlets for unhealthy practices is the purpose of this study. Descriptive survey research method was adopted while validated Modified Health Impact Questionnaire (MHeiQ) Cronbach’s alpha =0.78(heIQ, Osborne, Elsworth &Whitfield, 2013) utilised various techniques including: Positive and active engagement; health directed behaviour; skill acquisition; constructive attitudes; self monitoring; social integration and emotional well-being to elicit information on current status of hygiene, waste disposal, meat handling, sanitation, transportation, availability and utilisation of safety gadgets in abattoirs. Population comprised staff of three (3) abattoirs namely: Harmony and Kaara abattoirs and Ilaje slaughter slab in Lagos. Three hundred participants were selected through purposive sampling technique. Data analysis employed descriptive
statistics of frequency counts and percentages while multiple regression statistics determined relationships between variables and contributions to safe meat production. Hypotheses were tested at 0.05 alpha level. **Result:** Detrimental health practices were observed. **Conclusion:** There is need to initiate Behaviour Change for Positive health practices to transform meat production. **Recommendation:** Regular training for Butchers, enforcement of safety standard and health policies with monitoring by Public health officers. **Implication to Health Education:** Training on Self-Management Health Interventions using the Trans-theoretical Health Model (Prochaska & Velicer, 1997) was initiated to encourage gradual transformation of abattoir staff.

**Keywords:** Transforming, food, hygienic processing, abattoir.

15/EDU/03

**CRASH HELMET USE AND LEGISLATION AMONGST COMMERCIAL MOTORCYCLIST IN LAGOS METROPOLIS**

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There are many Government policies that have been formulated to curb the prevalence of motorcycle crashes in Lagos state, ranging from compulsory use of crash helmets and ban from plighting some routes within the state despite the effort of the Government; it has been observed that the motorcycle riders do not adhere to the rules. This paper explores the use of crash helmets amongst commercial motorcyclist. The sample size for this study was three hundred and nineteen (n=319) Commercial motorcyclists. The simple random sampling method was utilised to select study locations. The research instrument was a researcher developed questionnaire. The items included in the questionnaire were formulated based on the variables tested. Four point Likert scale was adopted. The socio economic data was subjected to descriptive statistics while hypotheses were tested with inferential statistics of Chi-square at 0.05 level of significance. Findings of the study showed that a larger percentage precisely 61% of the respondent has SSCE and 27% of the commercial motorcyclist has School Leaving Certificate, most of which are not health and safety literates. Due to this fact, they do not perceive helmet as a significant protective device. Government should ensure stricter legislative laws for offenders who do not comply with usage of the crash helmet. The paper advocates for policies to control, enforce and regulate the activities of commercial motorcyclists by relevant government security agencies such as the Federal Roads Safety Corps

**Keywords:** crash helmet, perception, commercial motorcyclist, legislation
INFLUENCE OF WASTE MANAGEMENT ON ENVIRONMENTAL INSURGENCY AMONG RESIDENTS IN LAGOS

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Disposing of wastes in urban cities has been a major health threat in the society, particularly in Ejigbo area of Lagos State.

Main objective
This study therefore examines the influence of waste management on environmental insecurity among sub-urban residents in Ejigbo community, Lagos State.

Methods
Descriptive survey research design was used for the study. Convenience sampling technique was used to sample 500 respondents. The research instrument was revalidated using crombach method of reliability for internal consistency and the result yielded 0.71 alpha. Research hypotheses were tested using t-test statistical tool and the result held at 0.05 alpha level.

Results
The findings showed significant influence on insufficient funding by government at all levels. This would automatically reduce any inherent health threats arising from the waste disposal in the community (t= 3.939, p< 0.05), effective monitoring and control by the agencies involved (t= 3.351, p< 0.05) and the level of awareness campaign should be intensified to completely eradicate insecurity of the environment among sub-urban residents in Lagos State, particularly people living in Ejigbo community of Lagos State, Nigeria (t= 3.092, p< 0.05).

The study concludes and recommends among others; that government should intensify their efforts in the area of awareness campaign; effective monitoring and earmark good budgetary allocation to enhance positive attitude among Lagos residents towards good waste disposal and thereby reducing environmental insecurity in Lagos.

Keywords: Waste disposal, Environmental insecurity, Health threat and Residents

Socio-economic barriers and academic achievement of secondary school students in Nigeria

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Much has been talked about; many steps have been taken through different plans for the disadvantaged children. Still, inequality exists in the classroom performance due to socio-
economic factors. Some students come out with excellent results, others with good results while there is also a class of low achievers. This study therefore was geared towards assessing socio-economic barriers and academic achievement of secondary school students in Nigeria. Two research questions and two null hypotheses were formulated to guide the study. The target population for this study was 2,231 respondents comprising 2,021 secondary school teachers and 210 principals. A total of 221 teachers and 21 principals were selected using simple random sampling technique. Socio-Economic Barriers and Academic Achievement Questionnaire (SEBAAQ) was structured instruments used to elicit the needed information from the respondents. The data collected were analysed using mean and standard deviation statistics to answer the research questions and independent t-test statistical tool to test the null hypotheses at 0.05 level of significance and 240 degree of freedom. From the analyses, an aggregate mean of 3.41 and 3.33 for the two research questions with the SD range of 0.46—0.70 were obtained indicating less variability in the opinions of the respondents. Implying that secondary school students are poorly fed, have no electronic gadgets, school fees are not paid regularly, have no learning materials, assist parents in farming, and hawk on the street after school. Based on the findings; parents economic empowerment, free and compulsory secondary education, and free learning materials were recommended to overcoming the socio-economic barriers affecting the academic achievements of secondary school students in Nigeria.

**Keywords:** Socio-Economic Barriers, students Academic Achievement, Secondary School education, Goal achievement

15/EDU/06

**EFFECTS OF REFUSE EXPOSURE ON SELECTED PHYSIOLOGICAL PARAMETERS OF DUMPSITE WORKERS IN LAGOS STATE**

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The study determined the effect of refuse exposure on selected physiological parameters of dumpsite workers in Lagos state. The selected physiological parameters studied were, physical characteristics, heart rate, systolic and diastolic blood pressure of dumpsite workers. The experimental research design was adopted for this study. The purposive random sampling technique was used to select the participants. The participants were forty (40) workers. Descriptive statistics of simple percentage mean and standard deviation were used in presenting the data collected. Inferential statistics of t-test was used in testing two stated hypotheses at 0.05 level of significance. There was significant difference in the physical characteristics and heart rate of dumpsite workers as a result of exposure to refuse dumps. It was recommended that dumpsite workers should be involved in regular exercise that will help develop their cardiorespiratory fitness.

**Keywords:** Body composition, Refuse handlers, physiological parameters, Refuse management
AN APPRAISAL OF THE IMPACTS OF NIGERIAN EDUCATION ON PROFESSIONALISM

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That the youths of today become the leaders of tomorrow is inevitable, and whether we are prepared or not, the natural law of succession is looming. In this jet age of awareness and globalisation, it is imperative that the Nigerian education system takes proactive steps by carefully developing the youths through a functional education system with a rich content scope that takes into consideration, the dynamics and yearnings of the labour market. This study therefore appraised the impacts of the Nigerian education on professionalism. Using a purposive sampling method, data were obtained through the interview of seven (7) interviewees, including graduates and postgraduate from Accounting, Architecture, Computer Science, Education, Engineering, Mass Communication and Medicine. The data were analysed descriptively. The results show that (i) 85.7% of the respondents agreed that there is a gap between the school curriculum and what operates within the profession, (ii) 85.7% of the interviewees also opined that the school curriculum aids the acquisition of professional and problem solving skills and that (iii) it takes an average of 6 years to become a professional under the Nigerian education system. It was however concluded that all stakeholders, viz-a-viz the government, professionals, all agencies of education and government and non-government organisations must work hand in hand so that the national objectives could be attained through education. The study therefore recommended that greater attention needed to be given to the offer of equal education opportunity to all citizens irrespective of sex, religion, ethnicity and age, among others.

Keywords: Education, Professionalism, Skills, Problems and Prospect.

WOMEN HOME-ROLES AND NON-HOME ROLES CONFLICT ON FAMILY STABILITY AND SUSTAINABILITY

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This research study was carried out to investigate women’s work-role conflict and the interaction with family welfare and family stability. Descriptive survey research technique was adopted for the study. The instrument (WRHRS) for collection of data was a structured questionnaire designed for this purpose. A total of Two hundred 200 participants were randomly selected as study sample from five different banks as purposive sample. The questionnaire made use of the four-point Likert scale of strongly agree, agree, disagree and strongly disagree. Reliability of the instrument was ensured through a Cronbach-Alpha method in which a reliability quotient of 0.81 was obtained. In analysing the data, descriptive statistics of frequency counts, percentages and Product Pearson moment
Correlation were employed at 0.01 level of significance. The results of the study revealed that, there was a significant relationship of job strain encountered by married women and their interaction with family members and secondly, there was a significant relationship between the behaviour of married working women and their home stability as a result, the two hypotheses were rejected with corresponding correlation coefficients of \( r_{cal} (2.34) \) and \( r_{cal} (2.70) \) respectively.

**Keywords**: Non-Home roles, Home-roles, Working Women, Role conflict, Home stability.

15/EDU/09

**ASSESSMENT OF SECONDARY SCHOOL STUDENTS’ KNOWLEDGE OF THE CONCEPT OF CLIMATE CHANGE: IMPLICATIONS FOR TEACHER EDUCATION**

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The purpose of this study was to investigate students’ knowledge on the concept of climate change and its implication for teacher education. This study was a descriptive survey. The population of the study comprised all secondary school students in Lagos State. Two hundred and ninety-four (294) Senior Secondary School Students from six (6) Secondary Schools in Lagos State, Nigeria were selected for the study through multi-stage random sampling. A test-item named Students’ Knowledge of Climate Change (SKCC) was used to collect data from the respondents. Item analysis was carried out to find the reliability of the SKCC. One research question and one research hypothesis was raised to guide the study. The data gathered were analysed using simple percentages, descriptive statistics and Analysis of Variance (ANOVA) at 0.05 level of significance. The findings showed no significant difference in the knowledge of climate change among the selected senior secondary schools. The implications of this finding were discussed and it was suggested that climate change units be included in the curriculum of teachers’ education. In addition, secondary school curriculum should be revised such that the students will be kept abreast with the challenges and mitigation strategies of climate change, among others.

**Keywords**: Climate Change, Global Warming, Education

15/EDU/10

**INFLUENCE OF GENDER STEREOTYPES ON SPORTS INVOLVEMENT AMONG INSTITUTIONAL ATHLETES**

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The study investigated the influence of gender stereotypes on sports involvement among institutional athletes. The sample used for the study was one hundred and two (102)
students-athletes selected from University of Lagos. The descriptive survey method was used and the respondents were selected through simple random sampling. A self-structured questionnaire was used to collect data for this study. The test-retest reliability value obtained for the instrument using Pearson Product Moment Correlation Co-efficient was 0.81. Data from the study was analysed with the use of frequency counts and percentages for demographic data and Chi-square for the variables of the study. Findings of the study revealed that there was significant gender differentiation in sports involvement among institutional athletes. Also, Parental approval will have no influence on sport involvement among institutional athletes. Media was confirmed to also influence sport involvement among institutional athletes. Based on the findings, it is recommended that the innate sport ability of a girl child should be jointly nurture by all and derogatory comment should be effectively nip in the bud. There should also be encouragement of mutual respect, cooperation and support between male and female Participants in sport

*Keyword:* Gender Stereotypes, Sports Involvement, Institutional Athletes

15/EDU/11

**AN INVESTIGATION INTO THE EFFECTIVENESS OF INSECTICIDE – TREATED NETS INITIATIVE AMONG PREGNANT WOMEN IN KOSOFE LOCAL GOVERNMENT AREA OF LAGOS STATE**

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The purpose of this study was to investigate the effectiveness of insecticide treated nets (ITN) initiative for pregnant women at Kosofe Local Government Area of Lagos State. The sample used for this study was two hundred and ten (n=210) pregnant women registered in various health centers and hospitals in the Local Government. The descriptive survey design was used and the respondents were selected using purposive sampling technique. Insecticide Treated Nets Assessment Questionnaires (ITNAQ) was used to elicit opinion from respondents. The test retest reliability value obtained for the instrument using Pearson Product Moment Correlation Co-efficient was 0.86. Data was analysed using frequency counts and percentage for demographic data while Chi-square was employed in determining the level of significance between the hypothesized and observed values at 0.05 alpha level. The result of the findings revealed that insecticide treated nets initiative have significant influence on health status, health awareness and also reduce maternal mortality among pregnant women. The study recommended that government and stakeholders in health promotion should provide insecticide treated nets to people and also create awareness on the importance of it to the general populace which will thereby reduce the scourge of malaria.

*Keywords:* Investigation, Effectiveness, Insecticide-treated Nets, Pregnant Women, Malaria.
DEMOCRATIC VARIABLES AS DETERMINANT OF STUDENTS’ CHOICE OF SPORTS ACTIVITIES IN LAGOS STATE

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This study was conducted to investigate demographic variables as determinant of students’ choice of sports activities. The variables studied were age, gender and religion & cultural belief. The sample for the study was two hundred and fifty (250) staff and members of selected recreational centres in Lagos State. Data were collected from the subjects with a self-structured validated questionnaire. Results were obtained through descriptive statistics of simple percentage and chi-square analysis used to test the stated hypotheses at a 0.05 level of significance. The findings revealed were age, gender and religion & cultural belief would all significantly influence students’ choice of sports activities in Lagos state. Based on these findings it was recommended that Demographic variables (age, gender, religion and cultural belief) influence choice of sports activities in Lagos state, therefore, advantage should be taken of this finding to increase the level of sports activities among secondary school students in Lagos state.

Keywords: Demographic Variable, Sports, Age, Religion, Health

CONSTRUCTING NATIONAL TRANSFORMATION THROUGH PRE-SERVICE CHEMISTRY TEACHERS’ AWARENESS OF ENTREPRENEURSHIP OPPORTUNITIES EMBEDDED IN SCHOOL CURRICULUM

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Transformation Agenda is based on a set of priority policies and programs which when fully implemented is expected to transform the Nigerian economy to meet the future needs of the people. Transformation Agenda can be well driven through entrepreneurship. Entrepreneurship helps in employment generation and wealth generation which can generate a lot of income through wages or salaries and taxes which can transform Nigeria into a global player. Entrepreneurship opportunities abound in the secondary school chemistry curriculum but the extent to which pre-service chemistry teachers in the university are aware based on their personal characteristics need to be examined. Four hypotheses were generated and tested. The design employed for the study was ex-post facto. The sampling techniques combined purposive and simple random technique to select a sample of 132 pre-service chemistry teachers. Entrepreneurship Opportunities in Chemistry Curriculum Questionnaire (EOiCCQ) was the instrument developed to collect data. Data was analysed using descriptive statistics, Multivariate Analysis of Variance, and Analysis of Variance. Significant differences were found to exist along the lines of course level, mode of entry and years of part-time working experience on their awareness of entrepreneurship opportunities.
entrepreneurship opportunities. The study has implication for teaching and learning as well as admission policies.

**Keywords:** Entrepreneurship Opportunities, Pre-service, Chemistry Teachers, curriculum, Personal Characteristics

15/EDU/14

**STRATEGIES FOR ENHANCING QUALITY ASSURANCE AND STANDARDS IN TECHNOLOGY EDUCATION PROGRAMME FOR NATIONAL TRANSFORMATION**

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The study examined strategies for enhancing quality assurance and standards in technology education programme for national transformation. Survey research design was used for the study. The population for the study comprised of 75 respondents, made up of six technology education lecturers, one workshop technologist and 68 undergraduate technology education students of the Department of Science and Technology Education, University of Lagos, Akoka, Nigeria. Three research questions guided the study. Structured questionnaire was used for data collection. Data collected were analysed using Mean and Standard Deviation. The findings of the study revealed adequate provision of infrastructural facilities and frequent accreditation exercise will enhance quality assurance and standards in technology education programme. Based on the findings of the study, it was recommended that the University of Lagos, Nigeria management should source funding and assistance through appropriate educational agencies such as TETFund; ETF, PTEF, NGOs; among others to enable them provide the needed infrastructural facilities to enhance quality assurance and standards in technology education programme in the University of Lagos, Akoka, Nigeria for national transformation.

**Keywords:** strategies, quality assurance, standard, technology education, national transformation.

15/EDU/15

**PERCEIVED KNOWLEDGE OF THE SPREAD, CONTROL AND PREVENTION OF EBOLA VIRAL DISEASE ON HEALTH BEHAVIOUR OF SECONDARY SCHOOL STUDENTS IN LAGOS STATE**

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The study investigated the perceived knowledge of the spread, control and prevention of Ebola viral disease on health behaviour of secondary school students in Lagos State. The sample used for the study was six hundred (600) secondary school students from Lagos State. The descriptive survey method was used and the respondents were selected through
simple random sampling. A self-structured questionnaire was used to collect data for this study. The test-retest reliability value obtained for the instrument using Pearson Product Moment Correlation Co-efficient was 0.84. Data from the study was analysed with the use of frequency counts, percentages, bar chart and pie chart for demographic data and T-test for the variables of the study. Findings of the study revealed that there was significant difference in students’ knowledge on the meaning of Ebola Virus Disease among secondary schools in Lagos state. Also, there is no significant difference in students’ perception on the causes of Ebola Virus Disease among secondary schools in Lagos state. Based on the findings, it is recommended that School authorities, including the school teachers should never relent in stressing the practice and importance of taking those health preventive measures that the students have been acquitted with. Parents should also emphasise the practice of these health preventive measures on their children, besides; they also should be exemplary in such practice.

**Keywords:** Perceived Knowledge, Control, Prevention, Ebola Viral Disease, Students

15/EDU/16

**FIRST LANGUAGE ACQUISITION AND ITS INFLUENCE ON EARLY CHILDHOODS’ LANGUAGE LITERACY**

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First language (L1) is the language a person has learned from birth or within the critical period. The learner speaks it fluently and is often the basis for cultural identification. First language might not be the native language or mother tongue (MT) of that individual but it might be the language of the environment in which an individual grew up. This study set out to investigate the influence of L1 on the early childhood’s language literacy and how it contributes to their early years’ language proficiency. A four Likert scale questionnaire was used to elicit information from 50 primary school teachers in Yaba Local Government of Lagos State. Data collected were analysed using simple percentages and frequency counts, while Chi square was used to test the hypothesis formulated. The study found out that first language has effect on early childhood’s language literacy. Recruitment and preparation of teachers who are proficient in the L1 and also have the knowledge of practices to teach the content areas is very crucial. This would help to support the children learning the language. Parental support is also very essential to enhance the success of L1 acquisition, and so, they need to be informed about the benefits of L1 especially the MT acquisition because it should not hinder their children’s opportunity to learn foreign or official language. Instructional materials for both teachers and students also need to be available in the language instruction.

**Keywords:** First language, Mother tongue, preschools’ language literacy, critical period
EDUCATION AS KEY TO ACHIEVING VISION 20: 2020

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This paper defines vision 20: 2020 as a local adaptation of the Millennium Development Goals (MDGs) which emerged from the UN 2000 summit as a strategic plan for global development. While the efficacy of education in realisation of the vision is recognised worldwide, the paper takes a critical look at the factors that could strip (and indeed have been stripping) Education of its efficacy in Nigeria. Identified as hindrances in the wheel of education are proliferation of policies, course offerings for fancy and not for relevance, poor implementation of curriculum, indiscipline and lack of political will. The paper concludes that for education to play its traditional role of enhancing development as envisaged in vision 20:2020, the Nigerian Education System in theory and practice needs be re-engineered and implemented with determination and sincerity. Sincerity comes to play when negative human interventions otherwise called inhibitive factors are eliminated. In the final analysis, the paper anchors the effectiveness of the new reengineered education system on injection of character training which is the missing link so far that can guarantee the educated Nigerian a sense of decency, decorum and do-it-right.

PROFESSIONAL COMMITMENT AMONG IN-SERVICE TEACHERS IN TEACHING AND LEARNING IN SOME SELECTED SECONDARY SCHOOLS IN EDO STATE NIGERIA

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This study investigated professional commitment among in-service teachers in teaching and learning of mathematics in the secondary schools in edo state. To carry out the study, two hypotheses were formulated. The sample of study comprised hundred (100) randomly selected teachers from four secondary schools in ovia south east local government area, edo state. Nigeria.
The instrument used for data collection was a self-developed questionnaire. The data collected were analysed and the formulated hypotheses were tested using independent t-test of and Pearson product moment correlation statistical methods. All the hypotheses tested were at 0.05 level of significance. The results of the data analysis revealed that: teachers/students relationship predicts significantly professional commitment among in-service teachers in teaching and learning of mathematics; there is significant influence between teachers’ attitude and professional commitment among in-service teachers in teaching and learning of mathematics.
Based on these findings, the following recommendations were made:
Teachers should be committed to their work; training of teachers should be an annual event; there should be more programmes for professional improvement of the teachers and poor
school facilities and poor rate of teachers teaching in the secondary schools in Lagos state should be addressed.

**Keywords:** Professional Commitment, In-service Teachers, Teaching and Learning Mathematics.

15/EDU/19

**DEVELOPMENT AND VALIDATION OF INSTRUMENT: A PANACEA FOR TEACHERS EFFECTIVENESS**

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This study examined the development and validation of instrument a panacea for teachers’ effectiveness scale (TES). To carry out this study, four null hypotheses were posited to give direction. The sample of the study comprised of one hundred and sixty (160) randomly selected teachers from public Secondary Schools in Ikeja Local Government Area of Lagos State.

The instrument used for data collection was a 30 item scale titled “Teacher efficacy scale (TES)” which was developed through the adoption of the items from the Megan Tschannen-Moran, College of William and Mary Anita Woolfolk Hoy, the Ohio State University Teacher self-efficacy scale (TSS) and additional items was generated by the researcher making the total items used as 41. The data collected were analysed and the formulated hypotheses were tested using Croanch’s Alpha, Descriptive Statistics and Pearson Product Moment Correlation statistical tools. All the hypotheses were tested at 0.05 level of significance. The results of the data analysis showed:

The scores of the teachers’ effectiveness scale validation instrument yield significant high coefficient of validity; the scores of the teachers’ effectiveness scale validity instrument yield high coefficient internal consistency and reliability; the scores of teachers in the factor structure of TES are high and there is significant correlation among the sub-scales of TES.

Based on this result of the findings the following recommendations were made. They include: Content Validity Ratio (CVR) becomes inevitable to determine validity coefficient of instrument because this formula requires the number of panels that will rate the items good and the total number of panels. The summation of the scores of the items will give a true picture of the validity coefficient; Validation of instrument will yield good result if the psychometric properties of the instrument is held to a high esteem; Croanch’s Alpha technique is required to refine and isolate the bad items from the good ones and also to ensure high validity and reliability coefficient of the questionnaire; Adequate knowledge of descriptive statistics is important to enable the developer to describe logically the minimum, maximum, mean and standard deviation in the table etc.

**Keywords:** Teacher efficacy, Construct validity, factor analysis, Factorial validity.
ASSESSMENT AND MANAGEMENT OF OCCUPATIONAL STRESS AMONG NURSES IN OGUN STATE: IMPLICATIONS FOR GENDER

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This study examined the effect of Solution Focused Brief Therapy and Guided Enquiry Method on occupational stress among nurses in Ogun State, Nigeria. Nursing was identified as an occupation that has high levels of stress. It was found that job stress brought about hazardous impacts not only on nurses' health but also their abilities to cope with job demands. The study was carried out in five government hospitals in Ogun State. This seriously impairs the provision of quality care and the efficacy of health services delivery. Quasi-experimental pretest/post test control group design was adopted for the study. Simple random sampling was used to select a sample size of 150 nurses comprising of 13 male and 137 female nurses drawn from five government hospitals randomly selected from the state. The two research instruments used to gather data for the study are Stress Inventory (SI) and Experience of Work and Life Questionnaire (WLQ) which were adapted for use by the researchers. Participants were drawn to participate in the study using the SI while the WLQ was used for both the pre and post test. The study revealed that there is no significant impact of gender on occupation stress, however among female nurses there are higher stress levels possibly due to multiple levels of responsibility. Solution Focused Brief therapy was however more effective in assisting nurses to cope effectively with stress resulting from their jobs.

Keywords: Occupational stress, Nursing, Solution Focused Brief Therapy, Guided Enquiry Method.

ASSESSMENT AND REMEDIATION OF SECONDARY SCHOOL STUDENTS’ POOR ACHIEVEMENTS IN SOME PERCEIVED DIFFICULT CONCEPTS IN MATHEMATICS

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This study investigated the Assessment and Remediation of Secondary School Students Poor Achievements in Some Perceived Difficult Concepts in Mathematics in Lagos, Nigeria. The participants were 300 students consisting of 150 male and 150 female SSIII students drawn from three senior secondary schools in Educational District IV of Lagos State through Stratified Random Sampling Procedure. The study used Quasi-Experimental Pre-test, Post-Test Control group design. Mastery Learning and Problem-Solving were used as treatment approaches while a control group was exposed to the traditional teaching method. The relevant data were generated using a researcher designed Mathematics Achievement Test (MAT). The instrument has a reliability coefficient of 0.80 when tested during the pilot study. Two hypotheses were formulated and tested at 0.05 level of Significance. The analysis of the result shows that there was a significant difference in the students’ level of perceived difficult concepts and there exists a significant main effect of gender on the post test scores of the (MAT). The Mastery Learning Approach (MLA) was efficacious in
remediating students’ achievements in mathematics while Problem Solving Approach (PSA) proved to be more effective in improving students’ skills in solving problems in mathematics. The study thereby recommends among others that teachers should redouble their efforts in the teaching of topics that are perceived difficult by students in mathematics, they should ensure adequate coverage of syllabus and its applications so as to demystify the topics.; teachers are also encouraged to have diagnostics and remedial evaluation with their students, which should includes frequent revision exercises so as to enhance students’ mastery of various knowledge and skills gained in previous lessons.

Keywords: Assessment, Remediation, Perceived Difficult Concepts.

15/EDU/22

A CRITICAL APPRAISAL OF THE IMPLEMENTATION OF BUSINESS STUDIES CURRICULUM AT THE JUNIOR SECONDARY SCHOOLS IN LAGOS STATE.

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The major aim of this study was to critically appraise the implementation of Business Studies curriculum at Junior Secondary school in Lagos state, in order to discover the areas of deficiency and proffer workable solutions, amongst which is the implementation must agree with main objectives of the programme. Some of the specific objectives were to determine the appropriateness of the curriculum, assess the infrastructure and equipment, find out the teaching methods and assess the entrepreneurial skills students have acquired. Descriptive survey research design was adopted. The target population for the study comprised all Business studies students and teachers in the forty-eight (48) public secondary schools and twenty (20) registered private junior secondary schools under the jurisdiction of the District IV of Lagos state. Data instruments used were Questionnaire, Checklist, and Observation schedule while Mean and Percentages were used for the analyses. Random sampling technique was used in this study, 15% of the population were used as the sample. Total of 500 students were used (public (350) and private (150)), 18 teachers were used to answer questionnaire while 8 teachers were used for observation purposes. This study revealed that the curriculum content was appropriate in contents and objectives of implementation. Many of the schools have facilities and equipment but not adequate for effective learning of Business studies to enhance the acquisition of the self employable: Shorthand (25.4%), Typewriting (33.4%), are still relevant in Business studies curriculum. Based on the results, it is recommended that government should employ more qualified Business educators.

Keywords: Appraisal, Implementation, Business studies, Curriculum and Junior secondary school.
EFFECT OF COGNITIVE RESTRUCTURING AND TIME MANAGEMENT ON ACADEMIC TASK PROCRASTINATION: ASSOCIATIONS WITH SELF-ESTEEM AND GENDER

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The study examined the effect of cognitive restructuring therapy, time management training on academic task procrastination and its association with self-esteem and gender among Senior Secondary School students in Ogun State. Three research hypotheses were equally generated to guide the study. Quasi-experimental pre-test/post test control group designs were adopted for the study. Simple random sampling technique was utilised to select sample size of 126 students comprising of 69 male and 57 female students drawn from three educational zones in Ogun State. Four research instruments were used in data collection which included: Tuckman’s Procrastination Scale (TPS), Index of Self-Esteem (ISE). All the instruments were used for the pre- test and post-test. The pre- test and post-test scores were analysed using the Analysis of Covariance (ANCOVA) at 0.05 level of significance. Two hypotheses were accepted while one was rejected. The study revealed that both Cognitive Restructuring Therapy and Time Management Training were effective in reducing academic task procrastination among the participants. The study also revealed that there is a significant interaction effect of self-esteem on participants’ academic task procrastination. Therefore self-esteem was found to be a significant predictor of participant’s academic task procrastination. Finally, it was revealed that gender was not significant on the level of academic task procrastination among the participants and that there were no interactions effects between gender and the experimental conditions among the participants. Discussion based on the findings of the study was done.

Keywords: academic task procrastination, self-esteem and gender.

THE EFFECTS OF DIFFERENTIATED INSTRUCTIONS ON STUDENTS’ ACHIEVEMENT IN JUNIOR SECONDARY SCHOOL BASIC SCIENCE

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Teaching and learning basic science (BS) in place of integrated science became operational since 2008 and the implementation of the new BS curriculum has been a concern to various stakeholders especially in achieving its objectives as stated in the National Policy on Education document. The study investigates the effects of differentiated instructions on students’ academic achievement in junior secondary school basic science. Ninety (90) pupils from two intact classes from a randomly selected secondary school from schools in Shomolu Local Government Area, Lagos State formed the sample size for the study. The study adopted quasi-experimental design and Basic Science Achievement Test (BSAT) developed
by the researcher was used to collect necessary data for the study. The data collected were analysed using ANCOVA at 0.05 level of significant. The findings of this study revealed that; there is significant main effect of treatment on students’ achievement in basic science, there is no significant main effect of gender on students’ academic achievement and there is no significant interaction effect of treatment and gender on students’ academic achievement. Based on the study findings, it was recommended that; basic science teachers should adopt differentiated instructional strategy in their teaching and that students should be encouraged to explore different method of learning to enhance their performance in science subjects.

15/EDU/26

LEARNING TO LEARN: STUDENTS’ STRATEGIES FOR LIFELONG LEARNING IN AND OF ENGLISH IN THE POSTMODERN WORLD

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The importance of learning to learn has become even more apparent in the 21st century post-modern world, where lifelong learning is the recommended education strategy. Furthermore, the use of various learning strategies for different situations underlines the use of critical thinking for achieving this goal. The problem, however, is that even if students would be encouraged to make a shift from their “education is just about schooling” orientation to a lifelong learning approach, there is little evidence to confirm that they have the strategy capacity to make it happen. The purpose of this study therefore was to ascertain if students explore various learning strategies required for lifelong learning, where English is the medium as well as the content of learning. The study utilised a descriptive survey design involving a sample of two hundred (200) students drawn from four secondary schools in the Mainland area of Lagos State, Nigeria. Data were collected using a “Student Learning Strategies for Lifelong Learning in and of English” questionnaire. The Statistical Packages for Social Science (SPSS) was used to analyse the data. The findings revealed that students are generally lacking in the use of various learning strategies for lifelong learning in and of English. Since the use of various learning strategies for different situations is considered sacrosanct to effective lifelong learning, it was recommended that students should be helped to improve on their learning strategies so as to increase the likelihood to engage in lifelong learning in and of English, both as students and after graduation.

Keywords: Learning to learn, learning strategies, lifelong learning, English learning
MOTIVATING AND RETAINING TERTIARY INSTITUTION ACADEMICS FOR NATIONAL TRANSFORMATION

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This study was carried out to investigate the mechanisms for academic staff retention in tertiary institutions that are feasible in Nigeria under the current financial constraints, and to gauge their effectiveness in offsetting the risk of staff loss commonly associated with motivation efforts in the country. The specific objective was to understand factors that militate against academic staff retention and to find feasible mechanisms for addressing them. Relevant research hypotheses were put forward to guide the investigation. The study employed descriptive survey as the research methodology. It involved collection of data from a sampled group of three hundred (300) academics using three sampled institutions through a stratified random sampling technique. The split-half method using the Spearman-Brown Prophecy Formula was used to ascertain the reliability of the instrument for data collection. The questionnaire was administered and results were analysed with percentage, Chi-square and Pearson Product Moment Correlation Coefficient. Some of the findings showed that there is significant relationship between motivation and job performance of academic staff, there is significant relationship between reward system and academic staff retention and there is a significant difference between economic and non-economic rewards as motivational strategies in the Nigerian higher education system. The study then concludes that a favourable work environment and adequate reward system must be put in place to improve the job performance, motivation and retention of the academic staff in order to achieve national transformation through an improved higher education system.

Keywords: motivation, retention, national transformation, academics

PARTICIPATION OF RURAL WOMEN IN REPRODUCTIVE HEALTH EDUCATION PROGRAMMES IN LAGOS STATE, NIGERIA

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The reproductive health situation of rural women in Nigeria is very critical. Despite the efforts of various governments, women living in the rural areas, within their reproductive years (15-49 years) lose their lives daily as a result of reproductive ill-health and complications, making the mortality and morbidity ratios very high. Some barriers are often responsible for this loss to various families, communities and the nation at large. A key and very effective remedy to counter this trend in the rural areas is Reproductive Health Education (RHE), which aims at providing them with the education and services that will help counter vulnerability to complications and death. This study focused on identifying RHE programmes available to rural women in Lagos State, as well as examines how well
the rural women participated in the programmes. It recommends that Adult and Non-Formal Education be used to root out challenges to rural women’s participation in RHE. **Keywords:** Reproductive Health, Reproductive Health Education, Rural Women, Maternal Mortality, Maternal Morbidity.

15/EDU/29

**THE ASSESSMENT OF WATER POLLUTANTS USING GAMMA DISTRIBUTION IN LAGOS STATE, NIGERIA**

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Some stake-holders believe that most health and socio-economic problems in Nigeria are caused by water pollution.

The main objective of this study was to examine water pollution in Lagos metropolitan city using a model called gamma distribution. It is of great importance to give attention to water pollution monitoring in the country, considering the rate at which people are being seriously affected by polluted water in the society.

**Methods**

Generalised Linear Model (GLM) was used to monitor the concentration of five water pollutants in Lagos state reservoir distribution; the variables involved are (turbidity, colour, pH, dissolved oxygen and alkalinity). W-test was also used to know if the distribution is normal or not.

**Results**

The average amount of turbidity is 2.6818 mg/l which was higher than the World Health Organisation standard of less than 1mg/l for treated water. The pH of water in the reservoir was 7.49 which conform to the WHO standard, between 6.5 and 8.5 mg/l. The mean amount of colour in the water was 5.0333 H.U; this is above the WHO standard value of 5.0 HU, while the dissolved oxygen and total alkalinity quantity in the reservoir were 7.5967 mg/l and 38.6833 mg/l respectively, which are in consonance with the WHO standard of portable water quality. In conclusion, it was discovered that all the pollutants were significant except the dissolved oxygen. The results presented provide a basis for the use of gamma distribution to model water pollutants. The study therefore recommends that, model used as decision support tools for the management of the Lagos state reservoir, as the attention of government and stake-holders are drawn to keeping water safe.

**Keywords:** Water Pollution, Kolmogorov Test, Gamma Distribution, Estimation
RESEARCHES IN EDUCATION STUDIES: DISSEMINATION AND IMPLEMENTATION CHALLENGES IN NIGERIAN HIGHER INSTITUTIONS

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The study investigated the challenges of disseminating and implementing research findings in Nigerian higher institutions. Specifically, the study sets out to examine the extent to which researchers in higher institutions take their research activities, ascertain the various means of disseminating researches in the institutions and the frequency of implementing the findings among others. Four Research Questions were raised to guide the study. The study adopted the survey design. The simple and stratified random sampling technique was used to get a total of 400 participants from four higher institutions in Lagos State. A research instrument titled Research Dissemination and Implementation Challenges Questionnaire (RDICQ) was constructed to collect data. The research questions were answered in tables of frequencies and percentages. The findings revealed that though most academics in higher institutions conduct researches, their findings are sparsely disseminated and implemented due to political and government factors. Recommendations such as involving the institutions in the implementation stage and indulging in the politics of the implementation agencies were proffered to ensure the realisation of turning research findings into practice.

CONSEQUENCES OF SUBSTANCE ABUSE ON ADOLESCENTS’ BEHAVIOUR IN CROSS RIVER STATE, NIGERIA

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Adolescents are the future generation of all nations globally. Therefore, their existence, well-being, survives, education and development are of utmost priority to all nations. A nations’ investment on their well-being, education and development holistically is a rightful agenda. Substances which are drugs have both positive and negative effects on those that consume them. Studies reveal that when substances are abuse, they tend to have negative effect on the users. Adolescents are young people who are full of energy and dare to experiment things around them. So, a lot of them attempt to experiment on these substances which include alcohol of all kinds, tobacco, India herm, cocaine, kola-nut, and snuff among others. When there are taken without recommendations, they affect the users negatively. This study was specifically designed to investigate the consequences of substances abuse on adolescents. Two research questions and two hypotheses were formulated to guide the study. The sample for the study was 300 teachers in the three education zones in the study area. The respondents were randomly selected. Percentages were used to determine the response rate in the two research questions and Pearson Product Moment Correlation
Statistics was used to analyse the two hypotheses. The results revealed a high percentage rate and strong significant relationship between the investigated variables. Thus, the calculated \( r \)-value of 13.14 and 13.28 at 0.05 level of significance with 298 degrees of freedom and critical value of 0.196 which showed a significant relationship between substance abuse and adolescents’ educational attainment and their holistic development.

15/EDUE/32

**RELEVANCE OF SELF-DESIGNED SPORTS ACADEMIC RESOURCES DATABASE MANAGEMENT INFORMATION RETRIEVAL SYSTEM**

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This study proved the relevance of Sports Academic Resources Database Management Information Retrieval System (SARDBMIRS). Databases with the tools for capture, storage, management, retrieval, integration, analysis, interpretation, reporting, and dissemination have the potential to be the single most powerful tools in sports administration. Knowing how to collect, store, access, retrieve, and integrate information is critical to effective performance analysis and decision making. Database should form the underlying foundation of most other tools used in sports administration as they provide structure and access to the information that is the catalyst for most other applications. Purposive sampling technique was adopted in selecting 100 \( (n=100) \) sports academicians and 100 sports academic resources were imputed into the system database to test the relevance of self-designed SARDBMIRS. Self developed SARDBMIRS questionnaire was used to collect data from the user after testing. The instrument used was validated by the experts in Information Science and Sports Administration and reliability of the instrument used was 0.82. Results for the study were analysed using descriptive statistics of frequency counts and percentages. The study concluded that SARDBMIRS is highly relevance to sports academics research and the resources imputed into the database are usable for Sports Administrators, sports researchers, coaches and others in related discipline researches.

*Keywords*: database, sports, resources

15/EDUE/33

**CURRENT TRENDS IN RESEARCH AND INNOVATION: IMPROVING TEACHER FORMATION THROUGH QUALITATIVE RESEARCH OF LECTURERS IN CROSS RIVER STATE**

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The Study sought to assess the level of research publications in journals by University Lecturers drawn from University of Calabar and Cross River State University of Technology
The instrument for data collection was a structured questionnaire while percentages and chi-square ratio were used to analyse the data. The findings of the study revealed that 62% of the lecturers had no publications in international journals while only 15% had 6-7 publications in local Journals, 70% had barely 1-5 publications in local Journals. The implication of this finding is that there is low publication of research work through international Journals. Suggestions were made to stimulate dissemination of research results for sustainable academic and industrial growth in Nigeria. More so, the primary goal of this paper is to consider how Qualitative Educational Research (QER) could be used to bring about salutary change in the production of teachers as well as in the classroom work of such products. The paper recommends on integration of quantitative and qualitative approaches as complimentary techniques for data collection, analysis and interpretations.

**Keywords:** Research, Innovation, Teacher Formation, Quality Education.

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15/EDU/34

**THE EFFECTS OF ENVIRONMENTAL LITERACY ON THE WASTE MANAGEMENT PRACTICES OF SLUM DWELLERS IN LAGOS STATE: A STUDY OF MAKOKO & ILEJA COMMUNITIES**

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Most countries in the world experience challenges in proper waste management practices and these seem to be more prominent in urban centers. These challenges range from reducing waste generation to proper waste disposal practices. All over the world there is a slum population of more than one billion people and unfortunately by 2020, this figure is expected to double. There are so many underlying factors contributing to poor waste management in urban slum areas which include; a high rate in population growth and consumption patterns, poor management by local authorities in provision of waste management facilities, inadequate law enforcement by the government, lack of community participation due to lack of awareness and literacy, and increase in urbanisation and industrialisation. The study therefore intends to evaluate the effects of environmental literacy on waste management practices among slum dwellers in Lagos state. In carrying out the study quasi-experimental design was used. The population for the study was made up of adults above 18 years who have resided in the locality for over 6 months. A stratified random sampling technique was used to select sample size of 104 respondents. Of the 104 respondents used, 52 were assigned to the experimental group and 52 to the control group. At the end of the study, the result showed that there is a significant difference in the waste management practices of the experimental group when compared to the control group. Based on the findings, recommendations were made.

**Keywords:** Environmental Literacy, Waste management, Personal Hygiene, Slum settlement
Evaluation is the key to improvement in higher institutions. When the efficacy of the system is not evaluated periodically and especially if the results of such evaluation are not ploughed back into the system, it will be difficult to establish whether there is progress toward the achievement of institutional goals. This survey utilised the input, process and output evaluation strands of the CIPP evaluation model to assess the interaction of internal evaluation practices in six South-western States in Nigeria consisting of 18 universities drawn from private, state and federal institutions using multi-stage, proportionate random sampling technique and a sample size of 844 respondents. 5 research questions were raised and 4 hypotheses were tested using the chi square and regression analysis. The findings reveal that the process of internal evaluation is not strictly pursued by all institutions and many rely only on the accreditation exercise by the NUC, which is external to the institutions. There were also no uniformity of approach with the few who appeared to practice internal system evaluation. As a result, the output of the institutions in the form of class of pass of the students, which will affect employability, were found to be linked to the available facilities and feedback processes. It was suggested that internal evaluation of the university system be taken more seriously and even follow some kind of format to ensure uniformity.

**Keywords**: system evaluation, universities, methods, student performance

This research was conducted to assess some physiological parameters (hematological factors) before the commencement of a programmed, prescribed exercise regimen, one group pre-test quasi experimental research design was adopted to study ten (10) apparently healthy middle aged and women who volunteered as participants’ blood pressure was measured while their aseptically collected blood samples taken from the vein were analysed for hematological status using standard measures and compared with standard norms. The result shows that the t-calc value (7.24, 8.82, 5.51, 11.00, 8.51, 82.77 and 25.97) for all the variables under Hematological status (Total cholesterol, HDL, LDL, Triglycerides, fasting blood sugar, systolic blood pressure and diastolic blood pressure respectively) is greater than the t-crit value of 2.26 at a 0.05 level of significance. This implies that there is a significant difference in the Hematological status of apparently healthy middle aged prior to
exercise prescription when compared to existing norms. It was concluded that individual’s disease risk stratification should be taken into consideration before prescribing exercise.

**Keywords:** Pre-exercise, Exercise prescription, Apparently healthy, Middle aged

15/EDU/37

**ASSESSMENT OF AEROBIC CAPACITY AND BODY COMPOSITION CHARACTERISTICS OF SCHOOL AGED CHILDREN IN LAGOS**

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This study focused on the assessment of the fitness status and physical inactivity level of school children in Lagos. Eighty two untrained students- volunteers age 7-12 years had their fitness status assessed. Quasi experimental research design was adopted, while two research questions and one hypothesis was raised. Data collected were analysed using the mean, frequency and standard deviation, while regression analysis was used to analysis the data collected. The body mass index mean of the students was 16.00. Level of significant was set at 0.05. It was revealed that age (t calc=-1.546), weight (t calc=-0.196), and gender (t calc= 4.311) were not significant at 0.05 alpha level. Implying that age, gender and weight does not significantly have a relative effect on the aerobic capacity of school children in Lagos when compared with existing norm. It was also revealed that the t-calc value of 23.133 is greater than the t-crit value of 1.99 for the PACER test. This implies that school pupils in Lagos have adequate aerobic capacity when compared with existing norms. Based on this finding it was concluded that organized physical activities should be well introduced to primary schools to fight the scourge of physical inactivity related disease.

**Keywords:** Aerobic capacity, Body composition, Pacer, Physical fitness

15/EDU/38

**THE DESIGN AND USE OF A LOW-COST IMPROVISED EDUCATIONAL ROBOTICS (ER) FOR THE TEACHING OF PHYSICS AND ITS RELATION TO ACHIEVEMENT AND SELF-ESTEEM**

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Recently, Information and Communication Technologies (ICT), along with Robotics invaded into the education arena and especially the area of experimental Physics. Today, Robotics tools for secondary classrooms have developed greatly in the past ten years. Integrating robotics activities in science curriculum provides rich opportunities to engage students in real world science and help them to develop conceptual understanding of physics principles through the process of investigation, data analysis, engineering design, and construction. In addition, students become more confident learners and develop better problem-solving and
teamwork skills. In this paper, we describe the construction of a robot for teaching high school physics classes in order to investigate certain attitudes of Senior Secondary School students towards Physics and to correlate these with their learning performance.

*Keywords*: Robot, ICT, Experimental Physics, Real world science, Conceptual understanding, Student attitude and Learning performance.

15/EDU/39

**DEMYSTIFYING SCIENCE LEARNING TO ADULT LEARNERS THROUGH THE APPLICATION OF NEW DIGITAL TECHNOLOGIES**

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In Nigeria much effort and expenditure is being devoted to enhancing the quality of science teaching at all levels of our educational system. This is due partly to the recognition of the need to develop a populace that is scientifically literate, in which the use of Internet, mobile and wireless technology has become inevitable.

In the non-formal education sector in Nigeria, adult learners unfortunately experience little or no exposure to science learning either at the primary or secondary levels as they often believed that learning science is very difficult and this situation is becoming very worrisome and alarming. Today, as we know, much of adult learning is commonly understood to be located in the workplace, family activities, community involvement, and other sites of non-formal education.

The paper describes the development, preparation and implementation of an e-pedagogy involving a five-component model of experiential learning viz. reflection, interference, participation, resistance and co-emergence to teach science to adult learners supported by the use of multimedia digital technologies and resources in the form CD-ROM learning packages, along with the use of some instructional software designed specifically for adult literacy learners. The focus is to determine the impact of such strategies on adult learning outcomes in science and also to ensure that science learning and adult education can empower all adult citizens to participate in a rapidly changing technologically literate society.

*Keywords*: Demystifying science, Adult Learners, New Digital Technologies and Technological literate society.
NUTRITIONAL KNOWLEDGE AND PRACTICES AMONG EXPECTANT MOTHERS IN ONITSHA NORTH AND SOUTH LOCAL GOVERNMENT AREAS OF ANAMBRA STATE

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What the developing baby feeds on goes a long way in determining its state at birth. For a pregnant mother to eat healthfully, she needs to have adequate knowledge of the different components of food. But if the knowledge is not put in practice, it becomes meaningless. The study examined the nutritional knowledge and practice of the pregnant women in Onitsha North and South Local Government Areas of Anambra State. A survey research design was used involving 250 pregnant women from the two Local Government Areas of Study. Data were collected using structured questionnaire and analysed using simple percentages and statistical correlations. The mean (x) percentage of subjects who indicated knowledge of what constituted good nutrition was greater than those who indicated regular practice. Some correlation existed between the subject’s knowledge of nutrition and their nutritional practice. Education, age and parity influenced their knowledge and practices of nutrition. Based on these results some recommendations were made such as: (a) Health Educators and nutritionists should be invited to give health talks to pregnant women during antenatal clinic (b) The age, educational level parity of the expectant mothers should be considered during the lessons.

Keywords: Nutritional Knowledge, Practices, Expectant Mothers

PARENTAL BACKGROUND AND COURSE OF STUDY OF UNDERGRADUATE STUDENTS IN THE UNIVERSITY OF LAGOS

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This study was designed to investigate the influence of parental educational qualification on the career choices of undergraduate students of the University of Lagos, Akoka. It also considered the influence of parental job-type and attitudes on the same, having employed the ex-post-facto survey design. Five hypotheses were tested on a sample of 307 randomly selected participants from nine faculties of the Institution. The Parental Variable and Career Choice Questionnaire (PVCQ) were used to gather data, while the independent t-test was used for the analysis. Results obtained showed a significant influence of parental educational qualification on students’ career choice, but found no significant influence of job-types and parental attitudes on the career choice of both old and young participants. The results were discussed and recommendations made.

Keywords: Course of study, job-types, attitudes, age and parents
PREPAREDNESS AND RESPONSE OF SCHOOL NURSES IN EMERGENCY SITUATIONS IN LAGOS STATE

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The need for quick and timely intervention in emergency for increased life expectancy is the object of Health promotion and Education. Also, the acquisition of Life saving skills and its display in response to life threatening conditions enhance its positive outcomes especially in school health services. This descriptive survey determined the extent of emergency preparedness by health care providers most especially Nurses in Tertiary institutions in Lagos State. Sample was made up of one hundred and fifty participants drawn through purposive sampling technique from registered student clients and Nurses of Medical Centres in tertiary institutions. The variables studied include: Response time, Attention and application of life saving Skills, Availability of Equipment/ Tools Decision making, Client referral / Transfer, Monitoring of patient and Incident Reporting. The research instrument consist a validated questionnaire for data collection while analysis utilised the descriptive and Spearman's Ranking statistics to ascertain the extent of emergency preparedness among Healthcare providers. The result reflects various patterns of responses in emergency situations. Recommendations were made to improve outcomes of care in emergency.

Keywords: School Nurse, Preparedness, Emergency, Response, Life Saving Skills

PEACE BUILDING CULTURE INTERVENTION FOR VALUE AND BEHAVIOUR CHANGE IN UNIVERSITY STUDENTS

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Relative peace values orientation has become more or less scientific action plan of great nations as it is now integral aspect of developing nations’ yearly development plan to adopt in socio-economic and (educational) knowledge- focused economic empowerment and intellectual capacity building (programmes) that entail inculcating in her citizens peace-centered values, social attitudes and behavior. The study examined the extent to which management behaviours such as leadership, communication and language use, team building, and supervision could be used to foster the culture of peace among students in the University as a way of preparing them for national unity, community understanding and productive personal happiness. The descriptive survey research design was adopted to study University of Lagos as a case point. Out of the population 13 Faculties, the purposive sampling technique was used to select four faculties while the stratified and random sampling techniques were used to select the sample size of 588 students. Culture of Peace through Learner Management Questionnaire (CPLMQ), structured on a four point scale was used. The Pearson Product Moment Correlations was used to test one hypothesis. The result
revealed that leadership and communication to a high extent influence culture of peace; and that team building and supervision related positively high to culture of peace among students. Based on the findings it was recommended that there should be intensive effort in promoting positive management behavior that would enable the students to imbibe the culture of peace. That these study participants are potential ambassadors to run the intervention model for peace building and conflict preventive education (PBCPE) needed for scaling up teenagers and adolescents in lower schools

*Keywords*: Peace, Culture, team building, conflict, preventive, behavior.

15/EDU/44

**ADAPTIVE RESEARCH STRATEGIES FOR BUILDING QUALITY MANAGEMENT SYSTEM (QMS) IN UNIT-BASED OF PROFESSIONAL PRACTICE TRANSFORMATION UNIVERSITY OF LAGOS**

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**Introduction**
The most envisioned teaching, research and community service provider is a unique global leader whose eyes must not just remain on the goal of education but at developing steady sophistications to characterise professional practices. To this extent academic staff of University of Lagos would be said to be strategically envisioning by setting internal standards to maintain steady state in the organisation; by building value adding implementation process and; by practically transforming resource input into output using unit-contextualised Quality Management System (QMS) based on seamless global principles.

**Problem Statement**
This study made a holistic capture of the University of Lagos as an industry operating in an environment that requires high level bonded rationality competition to attain sustainable input-output synergy using unit-based (in-house) QMS processes. The study took an integrated theoretical framework adapted from the global ISO 9001 combined with relevant assumptions of the theories of Total Quality Management (TQM) and the Quality of Work Life (QWL).

**Study Purpose:** This study is a state of the art case review of units of production for total transformation of professional proficiency and performance. The purpose is to re-engineer and transform professional practices of University academic staffers in a way that standard tones are conscientiously in tandem with definite procedures that have been tailored around measurable and cascaded objectives to the satisfaction of every stakeholder and ultimately the customers.

**Study justifications:**
At the end of this participatory action, research specific innovative mechanisms would be developed and entrenched to ensure realisable quality assurance. Other justifications include the emergence of a number of factors presented.
**Recommendation:** Recommendation insists that the PDAC be made a vital tool for effective instructional planning, development of mutually inclusive action plans and procedures that meets learning needs and conscientiously pursue ‘high-reach’ unit-based performance.

**Keywords:** Quality Management System, input-output synergy, professional proficiency

15/EDU/45

**BEYOND THE REGULAR UNIVERSITY SYSTEM: AN INNOVATION IN THE DEVELOPMENT OF NIGERIA’S FIRST ONLINE ENTREPRENEURSHIP UNIVERSITY IN SMALL SCALE BUSINESS ENTERPRISES**

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In recent times, there has been an increase in entrepreneurship education worldwide. Furthermore, globalisation has equally brought about many substantial changes in the job market to which young people as newcomers are vulnerable. In consequence of this changing environment, many students find that university education is no longer secured for employment in the job market and they need to pursue one type of entrepreneurial skills. Nigeria is a developing country with a high rate of unemployment among the young graduates emerging from our universities. The Nigerian government is taking great efforts in transforming into a knowledge-based economy, where the term ‘entrepreneur’ has been defined as one of its key elements. It is also generally agreed that small business enterprises are one of the key engines of growth in many developing countries by contributing to employment and wealth creation.

Self-employment is becoming an increasingly viable option for growing numbers of young graduates entering the labour market, so it is important to identify and develop good practice in the delivery of entrepreneurship training. Not only will this enhance the quality of its provision, but it will also serve to ensure that the economic benefits from larger numbers of start-ups and innovatory new businesses are fully realised. On this basis, tertiary education institutions need to adopt a holistic cross-disciplinary approach, which commits them fully to promoting opportunities for training students in the formation of enterprises and the translation of innovatory ideas into operational businesses. To be effective, this would involve a nation-wide provision, as well as outreach and engagement with the community and its businesses. The crucial issue however is whether our existing institutions of higher learning have the ability to respond to such demands.

This paper proposes a theoretical framework of how an online entrepreneurship university will look like within the context of small scale business enterprises if growth in this sector is to be achieved. The aim is to provide continuous training in the use of ICT for Entrepreneurship skill development in wide content and pedagogical dimensions, with maximum flexibility, personal support mechanisms and online learning options.
EFFECTIVE COHORT ADVISING: A SINE QUA NON FOR GREATER PRODUCTIVITY, EFFICIENCY AND TRANSFORMATION IN TERTIARY EDUCATIONAL INSTITUTIONS

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The study examines the influence of cohort advising on students’ academic/behavioural performance and stability and efficiency in tertiary institutions. To effectively accomplish this, a number of study objectives, research questions and hypotheses will be postulated. A descriptive survey research design will be adopted for this study. The study population shall comprise staff and students in public universities in Lagos State. A stratified and simple random sampling technique will be adopted to select 200 full time students’ and 100 members of academic staff from the two public universities in Lagos, namely, university of Lagos, Akoka, and Lagos State University, Ojo, Lagos. Therefore, the sample for this study shall comprise 300 participants. To elicit responses from the participants, a well-structured and validated questionnaire shall be used as the instrument to achieve this purpose. Data generated through this process shall be subjected to analyses using appropriate statistical analyses techniques. The outcome of the analyses will dictate the conclusion to be drawn and consequently the recommendations to be made.

Keywords: Cohort advising, students, performance

SURVIVAL ANALYSIS OF A UNIVERSITY DISTANCE LEARNING SCIENCE EDUCATION STUDENTS FROM MATRICULATION TO GRADUATION: LESSONS FOR NATIONAL TRANSFORMATION

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A nation hardly develops beyond the level of science and technological vision, skills and expertise acquired and put to application by her citizenry and that can only be facilitated through sound and effective teacher preparatory programs in a right mix of quality and quantity. Full-time teacher preparatory programs are inadequate to cater for the ever increasing number of personnel requirements for effective teaching and learning. That explains why distance learning the world over has become a veritable means of bridging the gap with regard to teacher supply. Analysing how a distance learning institute provide the right mix of quality and quantity was the pivot of this study. Five research questions and four hypotheses were tested using a retrospective cohort study design. Sample employed was componential of 227 science education students in four science education programs over a period of nine academic sessions from 2005-2006 to 2013-2014. Data were analysed using Kaplan-Meier procedure using descriptive statistical tools and non-parametric
inferential statistics of Mann-Whitney U-, Kruskal-Wallis and Chi-square tests. Lessons for national transformation revolve around the development of a model to estimate the proportion of science education teachers graduating at the right time as well as the quality of grades on graduation.

Keywords: Survival Analysis, Matriculation, Graduation, Distance Learning, Science Education National Transformation

15/EDU/48

TRANSFORMING THE NIGERIAN ECONOMY INTO A WORLD CLASS ECONOMY THROUGH LANGUAGE AND INTER-CULTURAL UNDERSTANDING

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The economy of Nigeria is ranked as the 21st largest economy in the world in terms of GDP and the 20th largest in terms of purchasing power parity. More than five decades after independence, over 62% of Nigeria’s 170 million people still live in extreme poverty despite all efforts towards economic diversification. (2015 CIA WORLD FACTBOOK AND OTHER SOURCES). According to The National Planning Commission Transformation Agenda 2011-2015, the Nigerian economy ought to have been transformed by 2015, but it has not. A number of factors are holding the country back.

Data was analysed using descriptive statistics of mean and standard deviation as well as the inferential statistics of Pearson Product Moment Correlation Coefficient. One of the two hypotheses generated and tested shows that there was a non-significant relationship between French language promoting the economy of Nigeria.

This paper justifies the role of language in intercultural understanding by enhancing bilateral trade and international relations that promote economic transformation. It further suggests a review of the language curriculum and its implementation strategies for policies relating to intercultural understanding, growth and sustainability.

It also suggests that French and Nigerian languages be made compulsory at the senior secondary school for better cross cultural diversification and competence.

Keywords: French and Nigerian Languages, Curriculum, Cultural Competence, Intercultural Understanding, Nigerian Economy

15/EDU/49

BONE LENGTH AS A SUBSTITUTE FOR HEIGHT AS AN INDEX OF NUTRITIONAL STATUS IN ELDERLY WOMEN

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The effect of age, height and bone length was assessed in 268 elderly females aged 70-99 years. Similar measurements were made on younger females (age 30-40 years) who acted as control. The participants were drawn from rural and urban sections of Lagos and Oyo
States. The findings from the study revealed that younger females (30-40 years) had significantly higher (P< 0.001) in height values than the elderly females. And among the elderly participants, the height measurement decreased with advancing age. However, arm and leg lengths were similar for all participants (young and old) and did not decrease with age. A positive and significant association (P<0.02) occurred between height and arm length and between height and bone length, thus, the correlation between height and bone length (arm and Kg) suggest that either arm or leg measurement may be substitute for height as an index of stature in the assessment of nutritional status. The relationship also implies that once growth is completed, ageing has no effect on arm and leg length.

**Keywords:** Bone, Length, Height, Arm, Leg, Age, Nutrition.

15/ENG/01

**COMPARATIVE STUDY OF VIRGIN/RECYCLED LOW DENSITY POLYETHYLENE-WOOD FLOUR COMPOSITE**

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A comparison of the properties of virgin and recycled low density polyethylene (LDPE) reinforced with different amounts of wood flour has been carried out in this work. The Polymer matrix composites were produced using a double hot pressing method to ensure even distribution of the wood flour. The virgin LDPE composite resulted in a slightly higher tensile strength and impact energy values but both the tensile strength and impact energy decreased with increase in wood flour content for both composites. The hardness, density and water absorption values for both composites increases with increase in wood flour content. While the hardness and density values for the virgin LDPE composite is slightly higher than that of the recycled LDPE composite, the opposite is the case for water absorption. The Fourier Transform Infrared (FTIR) spectroscopy results reveal that there is no significant change in the nature of the chemical bonding for both composites. The microstructure of the composites reveal improved interfacial bonding between both composites.

**Keywords:** Low density polyethylene, wood flour, composite, recycling

15/ENG/02

**STYRENE CONVERSION MODELING AND ESTIMATION OF POLYDISPERSSITY INDEX**

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In this study, the kinetics of free radical polymerization (FRP) of styrene, initiated by benzoyl peroxide in polar solvent, are described. A model was developed based on a set of elementary reactions by mass balance of the chemical species and method of moment
analysis. The set of modeled equations was solved analytically using the Garg et al., (G-model) approach for the estimation of polystyrene average properties such as weight and number average molecular weights and polydispersity, which were found to vary with reaction conditions and styrene monomer conversion. Our earlier reported styrene monomer conversion model was improved upon by the incorporation of the Trommsdoff Norrish effect. The modified conversion model was found to give a better prediction.

Keywords: Kinetics, radical polymerization, polydispersity, method of moment, Trommsdoff Norrish effect.

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15/ENG/03

SINGLE – PHASE AC-DC DRIVE WITH INPUT POWER FACTOR CORRECTION

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This paper presents a simple PFC configuration using the asymmetrical single – Phase Bridge as a boost converter to achieve a unity power factor. This approach has the advantage of fewer semi-conductors; simplified control with a high performance features and satisfies the IEC 555 harmonic current standards. Simulation and experimental result shows that the input current and voltages are completely in phase at all times with lower order harmonics eliminated.

Keywords: Power Factor, Pulse - Wave Modulation PWM, AC-DC Converter, Harmonics

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15/ENG/04

ALUMINIUM ALLOY METAL MATRIX COMPOSITES: DIFFERENT EGGSHELL PARTICLE SIZES, A COMPARATIVE STUDY

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100 and 150 µm sized eggshell particles from 2-12% by weight were used as reinforcements for the fabrication of Al alloy based metal matrix composites using compo cast technique. The technique involves effective stirring of Al alloy melt-eggshell particle mixture prior to pouring process. The morphology of the eggshell particles and aluminium Al alloy/eggshell composites were examined using scanning electron microscope (SEM). The mechanical properties of the fabricated Al alloy /eggshell composites were investigated. Results revealed appearance and textural differences in the eggshell microstructures. Microstructures of Al alloy/100µm eggshell composites are finer than those of their counterparts. This is attributable to diffusion enhancement as the eggshell particle sizes decreases. Al alloy/100 µm eggshell composites displayed better mechanical properties than
Al alloy/150 µm eggshell composites. Hence the use of 100 µm sized egg shell particles for reinforcement has experimental proven advantages over 150 µm sized eggshell particles.

**Keywords:** Alloy; composite; particle; study; diffusion

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**THE EFFECTS OF RESIN MATRIX COMPOSITION, FILLER VOLUME AND PARTICLE SIZE ON THE MECHANICAL PROPERTIES OF DENTAL RESIN COMPOSITES**

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**Objective:** The behaviour of dental resin composites (DRC’s) under mechanical loading has been of concern in dentistry as this determines their clinical application. The aim of this study is therefore to check the effect of the resin matrix composition, filler volume and particle size on the mechanical properties of DRC’s

**Methods:** In this experimental in-vitro study, 6 different types of composite resins were used as follows: Two(2) Micro hybrid- Super Cor (SC) and Natural look(NL); Two(2) hybrid- Alpha dent (AD) and Henry Schein (HS) and two(2) Nano hybrid- i-Xcite(IX) and Fusion(FS), each with varying resin matrix composition, filler volume and particle size. Samples were prepared in aluminum molds and light cured using Optilight Max GNATUS light curing unit at constant time of 20 seconds. The specimens were stored in distilled water at 37°C for 48 hours. The specimens were then subjected to tensile test and three point loading using Electro Force 3200 (from BOSE) at cross hair speed of 1.0mm/min and varying speed of 0.5mm/min, 2.0mm/min and 5.0mm/min.

**Results:** Henry Schein 20/20 (hybrid; bis-GMA;56%) showed the lowest flexural strength but the beat tensile strength amongst the group. i-Xcite (nanohybrid; bis-GMA;TEGDMA;UDMA;76.5%) showed the highest flexural strength and relatively low tensile strength. All resin types showed increasing flexural strength with increasing strain rate.

**Conclusion:** Tensile and Flexural strength are first dependent on the resin matrix composition, the filler particle size and then the filler volume in that order.

**Keywords:** Micro hybrid composite, Nano hybrid composite, Flexural strength, Filler volume, Particle size
DEFORMATION BEHAVIOR OF LED AND HILED CURED DENTAL RESIN MICROHYBRID AND NANOFILLED COMPOSITES

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The deformation behavior of commercial microhybrid resin based composite and nanofilled composite cured with the conventional Light Emitting Diode (LED) and exponential Light Emitting Diode (HiLED) under various loading condition is here presented. Deformation of restorations such as shrinkage and shearing from curing and mastication have been a major concern for clinicians because of void and crack formations in restored tooth structure which affects the mechanical properties of the resin composites. The current paper therefore investigates the deformation behavior of these materials for proper analysis. Samples of microhybrid resin based composite and nanofilled composite were molded with copper foil molds with standard dimension 2mm X 2.5mm X 8mm, photo-cured by both conventional Light Emitting Diode (LED) and exponential Light Emitting Diode (HiLED) and then tested on the ElectroForce 3200 for their deformation behavior and mechanical properties. Effects of variation of strain rate and curing time were also investigated. The results showed that, out of the four groups of samples studied, microhybrid resin based composite cured with exponential Light Emitting Diode (HiLED) exhibited highest tensile strength of 28 MPa. The deformation of the samples exhibited hysteresis responses and path dependence nonlinear behavior. At stress values less than 4 MPa, viscoelasticity was observed in all the four groups of samples but at stress values beyond 4 MPa viscoplasticity deformation was observed. Finally, it was observed that increasing curing time leads to increasing tensile strength for materials cured by both methods.

Keywords: Micro hybrid composite, Nanofilled composite, Deformation Behaviour, viscelasticity, viscoplasticity

DESIGN, CONSTRUCTION AND TESTING OF A NANOFIBRE ELECTROSPINNING SYSTEM


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This study focuses on the design, construction and testing of an electrospinning machine for the production of polymer composite fibres. The electrospinning apparatus includes a syringe pump modified to suit the machine mechanism, a high variable voltage power supply of positive polarity designed by the authors with a power output between 20 and 30 kV. To test and validate the performance of the machine Poly Lactic acid - palm fruit bunch - dichloromethane blends were electrospun, varying the concentration of the palm fruit
bunch (treated and untreated) between 0-8 wt. % and maintaining a constant applied voltage of 26 kV, and PLA-palm fruit bunch-dichloromethane (DCM) concentration of 12.5% (w/v). Results show that the machine produces nano-sized fibres with average diameters up to $3.38 \times 10^3$ nm.

*Keywords*: Electrospinning, nanofiber composite, fibre morphology.

15/ENG/08

**ON THE ANALYSIS OF HEAT TRANSFER AND KINETICS IN THE SLOW PYROLYSIS OF BIOMASS PARTICLE: THERMO-GEOOMETRICAL EFFECTS**

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Thermochemical conversions of biomass have been areas of interest in various countries. However, the technical barrier in the technology and in the design of the conversion plant has been one of the major challenges impeding the development and the utilisation of the alternative energy conversion technology. In the conversion processes, pyrolysis plays an integral role. The theoretical studies of this process enhance better understanding of the thermochemical conversion of the solid fuels. In order to carry out such studies, the development of thermal and kinetic models of the pyrolysis process is required and such are needed to be solved analytically in order to gain better insight of the actual process. Therefore, this study used Laplace transforms; Hankel transform and Method of Variation of Parameter are used to present analytical solutions to the heat transfer models of rectangular, cylindrical and spherical particle shapes respectively. Also, the pyrolysis kinetic models were solved analytical using Laplace transform. The study is used to investigate the effects of particle shape, particle size, isothermal and non-isothermal heating conditions, convective and radiative heat transfer (through the use of a modified Biot number) on the pyrolysis of a biomass particle. The work showed good agreement when compared to the experiment work and the previous works carried in literature. This work is of great importance in the design of some pyrolysis reactors/units and in the optimal design of the biomass gasifiers.

*Keywords*: Energy, Biomass particle, Pyrolysis, Kinetics, Heat transfer, Analytical solutions

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THERMAL ANALYSIS OF LONGITUDINAL FIN WITH TEMPERATURE-DEPENDENT PROPERTIES AND INTERNAL HEAT GENERATION USING GALERKIN’S METHOD OF WEIGHTED RESIDUAL

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In this study, heat transfer in a longitudinal rectangular fin with temperature-dependent thermal properties and internal heat generation has been analysed using Galerkin’s method of weighted residual. The simple but highly accurate solution was validated by the exact solution for the linear problem and also, by numerical method and differential transformation method for the case of the non-linear problem. The developed heat transfer models were used to investigate the effects of thermo-geometric parameters, coefficient of heat transfer and thermal conductivity (non-linear) parameters on the temperature distribution, heat transfer and thermal performance of the longitudinal rectangular fin. From the results, it shows that the fin temperature distribution, the total heat transfer, the fin effectiveness, and the fin efficiency are significantly affected by the thermo-geometric and thermal parameters of the fin. Therefore, the results obtained in this analysis serve as basis for comparison of any other method of analysis of the problem and they also provide platform for improvement in the design of fin in heat transfer equipments.

Keywords: Heat transfer analysis, Longitudinal Fin, Galerkin’s method of weighted residual, Temperature-dependent thermal Properties, Internal heat generation.

PHYSICO-MECHANICAL AND THERMAL PROPERTIES OF INSULATING REFRACTORY BRICKS FROM IKORODU AND OSIELE FIRECLAYS AND AGRO-FORESTRY WASTES

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In this article, low-cost, high quality, thermal insulating refractory bricks from fire clays and saw-dust, rice husk and coconut shell were developed. The as-received clays and agro-forestry wastes were air dried, crushed and ground. The materials were characterised in accordance with ASTM C 456-13, C373-88 (2006) and C133-97(2008) standards to determine their chemical constituents, physical and mechanical properties of the materials respectively. The thermal characterisation of the refractory bricks was conducted in accordance with ASTM C356-19 standard. The micro structural examination of the bricks was carried out using ASPEX 3020 variable pressure Scanning Electron Microscope / Energy Dispersive X-ray. The results of tests revealed that the major chemical constituent in the clays were silica and alumina. The sawdust is more carbonaceous in nature and consists of more alkali metals than both rice husk and coconut shell. The porosity of the insulating brick increases as the volume of waste increases due to the increase in the amount of organic matter, which leaves pores after firing. However, the high degree of porosity degrades the mechanical strength of the materials – the larger and more numerous pores, the thinner the
enlarging walls of solid material and lower the strength. The high degree of porosity also contributes to the decline in the value of the thermal conductivity of the refractory bricks. The cost benefit analysis carried out revealed that the price of the developed bricks is far lower than the cost of imported bricks. The economic savings is approximately 57% per unit brick.

**Keywords:** Porosity, clays, wastes, strength, cost

19/ENG/11

**DESIGN AND AUTOMATION OF A FORCE BALANCE INSTRUMENTATION FOR THE UNILAG SUBSONIC WIND TUNNEL**


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Aerodynamic quantities are immensely important for the design of air-borne equipment and structural facilities, demanding accuracy and precision in their measurement. Wind tunnel testing provides the required understanding of aerodynamic effects and performance of space/road vehicles during the design process. The measurement and control applications for wind tunnel testing typically include the wind speed measurement and control, static and dynamic force measurement, pressure profile measurement; and position and motion control for orienting the model with respect to the wind direction. Dimensional analysis, just like most topics in engineering, helps engineers to create a relationship between real quantities and virtual quantities, where most cases have been scaled to size. Automation of the instrumentation procedure for the Unilag Subsonic wind tunnel is investigated. A brief introduction to the force balance, forces and moments used to measure in the wind tunnel is done. Several procedures are proposed, including the installation of data acquisition accessories to the existing model of force balance; revised positioning of the test section; and the re-designing of the force balance system with enhanced degree of freedom. The use of LabVIEW is adopted for the control of the subsonic wind tunnel in order to increase accuracy of the results taken from the test object and reduce effect of an arduously repetitive work. It is anticipated that the resulting fully calibrated wind tunnel will be used for air flow control, pressure and force measurements.

**Keywords:** Force balance, LabVIEW, Wind tunnel, pressure measurement.
DESIGN AND DEVELOPMENT OF MICROCONTROLLER BASED VEHICLE SAFETY SIGNS DISPLAY & CONTROL ON THE DASHBOARD

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This paper discusses the design of a safety signs display for motorists and road users. It is aimed at improving on the existing dormant C-Caution by integrating upon to improve on the existing dormant C-Safety signs such as parking, faulty, u-turn, turning left and turning right and learner. All these signs are easily controlled or changed from the dash board of the vehicle. Therefore, it minimises the stress of manual changing of displays by the road or vehicle users. This is achieved by the use of programmable PIC16f877a microcontroller which is responsible for generating character and files that will be sent to the screens as images that have been designed with codes. More so, after testing of the overall designed project, the results obtained were satisfactory.

The display of safety signs is applicable in the transportation industry, construction site and individual advertisement purpose among others.

Keywords: Programmable PIC16f877, Microcontroller, Safety display sign, C-Caution.

MAPPING ENCROACHMENT WITHIN THE BOUNDARY OF THE UNIVERSITY OF LAGOS

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This study evaluates the extent of encroachment that have occurred within the University of Lagos (Unilag) environment by evaluating the land use/land cover, between 1962 and 2011, using data from Ikonos satellite images. We then performed subsequent analysis and classification of the acquired data to monitor and create land use maps from aerial photographs and satellite imagery of the University of Lagos and its environs for land use analysis to verify areas that have undergone encroachment. Encroachment mapping gets all its input from analysing the land use and land cover changes of the area in study. This research attempts to study the pattern and magnitude of urban encroachment that has taken place over time within the period of 1962-2010 in the University of Lagos. The amount of areas that have undergone encroachment can be vividly shown after digitizing all the imageries used in ArcGIS Environment and over laying it on the base map that will show the extent (true boundary) of University of Lagos. In addition to that, the areas where encroachment occurred were calculated in square kilometres (sq. km.) for 1982, 2005, &
The differences in the areas of encroachment for the three years showed that encroachment of built up areas within the Unilag boundary is on the increase due to rapid influx of people within these areas. The land use/land cover classification obtained from using the digitized high resolution image will enable us know which type of land class has undergone encroachment.

**Keywords:** Encroachment, University of Lagos, GIS

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**GEOSPATIAL ANALYSIS OF THE DISTRIBUTION OF BLOOD BANKS AT LAGOS ISLAND GENERAL HOSPITAL AND ITS ENVIRONS**

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This project is fundamentally aimed at analysing the distribution of blood banks at the Lagos Island General Hospital and its environs, to eliminate delays in the process of blood transfusion and to provide a decision support tool for medical administrators in that area. A number of objectives were generated. The principal ones among these objectives are: to collect relevant information about locations of blood banks in Lagos Island and the type of blood they stock, to build a GIS database by converting these analogue information to digital, to demonstrate the data retrieval capability of the GIS database by using SQL query tool, to determine the optimal route between the blood banks (supply point) and Lagos Island General Hospital (demand point), and to generate the outcome of the query operation in form of maps and reports for easier dissemination.

The relevant data used in the development of the GIS database were derived from various sources depending on the data type. For example, the attribute data was derived directly from field surveys, while the spatial data was generated from existing analogue maps acquired from the Lagos Island Local Government.

The output of analysing the resulting GIS database provided a comprehensive solution to the problem of this project research, which is the development of a decision support tool for administrators to monitor events in medical cases and also for medical professionals for eliminating delays in the process of blood transfusion.

Therefore, one can conclude that for now GIS remains the most effective and efficient tool for handling sophisticated spatial problems and consequently providing a phase lift on conventional techniques.

**Keywords:** GIS, Blood transfusion, Lagos state.
MODELLING OF CONTROLLED RECTIFIERS FOR RESONANCE STUDIES BY PIVOTAL FUNCTION TECHNIQUE

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This paper describes the extension of pivotal approach in deriving the mathematical representation of the input current of a controlled rectifier circuit. The basis is that a single thyristor and its associated rectifier applications could be modeled as pivotal function which relates the input voltage and current with load resistance. A table of rectifier parameters accounts for the variation in rectifier configuration as well as parametric variations in the pivotal function. The model equation was derived in a way as to include or exclude the effect of source inductance for flexible applications. Including the effect of source inductance resulted in a non-linear second order ordinary differential equation with the inverse pivotal function as the second coefficient. The derived model was deployed in the analysis of three phase full wave controlled rectifier to determine the magnitude and waveforms of the distorted input current at different firing angles. The results of this analysis are compared with computed values based on the piece wise linear model of the P – N junction semiconductor.

Keywords: Analytical Model; Harmonic Distortion; Network Analyzer; Power Quality; Controlled Rectifiers.

ANALYSES OF THE CHANGES IN LAND USE AND ROUTE NETWORK IN PORT-HARCOURT CITY LOCAL GOVERNMENT

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Increasing population results in an increased demand for residential and commercial land use. Land-use changes without consideration for route networking usually results in poor urban planning which manifests differently. This study focuses on the use of GIS in analysing the varying land use patterns and route network in Old Port-Harcourt Township and Borikiri, Rivers State, Nigeria. Existing maps, aerial photographs, digital ortho-photos and data acquired from 1952–2005, and hand held GPS data acquired in 2008 were used in analysing the changes in land use and route network of the study area. AutoCAD 2006 was used to digitize and geo-reference, while ArcGIS 9.2 was used for overlay and analyses of the land use pattern and route network. Technical reviews for land-use pattern of the study area showed a decline in Agricultural land-use from 11% in 1952 to 7% in 1967, and further reduced to 2% in 2005. The built-up area increased from 9% in 1952 to 11% in 1967, and escalated to a whopping 46% in 2005. Between 1952 and 2005, wetlands reduced from 67.5% to about 39%. Increased influx of people into Port-Harcourt city in search of jobs due to industrialisation and urbanisation over the years was largely responsible for these changes. We recommend adequate planning and monitoring of land-use and road network design.
and construction in Rivers State by the government and relevant stakeholders towards building an environment that is physically conducive and aesthetically pleasant for living, learning, working, and recreation.

**Keywords:** Land use, residential, commercial, GIS, GPS.

**15/ENG/17**

**SIMULATION OF GPS SATELLITES ORBITS**

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Simulation typically involves the imitation of the operation of a real-world process or system over time. The act of simulation first requires that a model be developed to represent the key characteristics or behaviours of the selected physical or abstract system or process. The significance of this project is to help us understand, and better appreciate the basic structure and components of the GPS satellites and orbits and to explore the software simulation capabilities of Matlab as an alternative to hardware GPS simulators or receivers. This simulation was achieved by firstly obtaining the ephemerides (orbital parameters data) which completely defined the orbits of the satellites, then computation of the satellites' positions (Earth Centred Earth Fixed Co-ordinates, ECEF) from relevant equations by running a program written in MatlabR2010b. Thereafter, the computed co-ordinates were inputed into a set of function blocks in RapidSTM 32 located in the Simulink library. A simulation model was designed in Simulink, comprising of an assemblage of nine function blocks with each having different functionalities geared towards achieving the simulation. The computed ECEF co-ordinates of the twenty four satellites were converted to Earth Centred Inertial (ECI) co-ordinates to produce a graphical display of the three-dimensional orbits of the satellites as they orbit the earth in their different orbital planes. Simultaneously, the ECEF co-ordinates were transformed to geodetic co-ordinates: longitudes, latitudes, and altitudes so as to produce a two dimensional graphical display of the ground tracks of the twenty four satellites that orbit the earth.

**Keywords:** Simulation, Software Architecture, Ephemerides, Ground Tracks

**15/ENG/18**

**IMPLEMENTATION OF LECTURE AND WORKSHOP ACTIVITIES ON MOODLE LEARNING MANAGEMENT SYSTEM FOR “VISCOUS FLOW THEORY”**

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A detailed sequential description of the implementation of lecture and workshop activities in the Moodle Learning Management System (MLMS) is explored. The MLMS-enabled teaching delivery method promises a quicker and prompt interaction between lecturers and
students; with a more dynamic and scientific methods for the benefit of students and lecturers in the higher institutions of learning. This electronic platform of student-lecturer interaction offers a relatively new development in the Information Communications Technology (ICT) world, including assignment activity, assignment grading, among other capabilities. The implementation of MLMS at the University of Lagos is demonstrated with an undergraduate course, titled “Viscous Flow Theory” in the department of Mechanical Engineering, University of Lagos.

*Keywords*: Information Communications Technology; Moodle; Workshop Activity; Lecturer-Students Interaction; Viscous Flow Theory

15/ENG/19

**CORROSION CHARACTERISTICS OF REBAR AND FIBRE REINFORCED CONCRETES IN SELECTED ENVIRONMENTS**

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The corrosion characteristics of rebar and fibres reinforced concretes in selected aggressive environments were investigated. Steel rebar and different fibre materials consisting of steel fibre, coconut fibre, glass fibre, and polymer fibre were used as reinforcements. Corrosion characteristics of these reinforced concretes were evaluated using visual inspection, compressive strength test and accelerated impressed current technique in 3.5wt% NaCl. Analysis of the results indicated that concrete reinforced with polymer and steel fibres after corrosion exposure exhibited lower reduction in compressive strength at 10%, 17%, respectively compared to conventional rebar concrete which had a loss of about 20% across the selected environments; whereas strength loss averaged 44% and 28% in concretes reinforced with coconut and glass fibres, respectively. The findings from this investigation suggest that steel and/or polymer fibres are suitable substitute for rebar in reinforcing concrete.

*Keywords*: Fibre reinforced concretes, accelerated corrosion, aggressive environments, compressive strength
15/ENG/20

DESIGN OF A DOUBLE-PIPE HEAT EXCHANGER WITH BLASIUS IMPOSED TEMPERATURE BOUNDARY CONDITION

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The treatment of the conjugate heat transfer between the solid-liquid interfaces in the design of heat exchangers is approximated with the Blasius boundary layers. The reduction of the expensive penalty of solving the complete Navier-Stokes equations for the transport of momentum and energy within a conjugate system is attempted. The temperature profile evolves as a result of the heat interaction between the wall and the fluid. This region is analysed and imposed on the inner heat exchanger surface as a varying temperature layer primarily resolved from the Blasius similarity equation. In this research, a section of the inner-tube heat exchanger model will be analysed as a flat plate and the temperature distribution in the inner-tube wall material, whilst imposing the thermal boundary layer conditions.

Keywords: Heat transfer, Heat exchangers, Blasius similarity solution, Computational fluid dynamics.

15/ENG/21

ASSESSMENT OF MAINTENANCE POLICIES AND STRATEGIES IN PUBLIC SECONDARY SCHOOL BUILDINGS, OGUN STATE, NIGERIA

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This study assessed the existing maintenance strategies and policies in the public secondary school building adopted by the school principals. The purpose of the study is to investigate the maintenance strategy and policy practiced used by the maintenance managers of public secondary schools in the study area in Public Secondary School buildings in Ado-Odo/Ota Local Government Area of Ogun State. The existing policies and strategies were investigated in a two-phase process: the information gathering phase using questionnaires and observation survey analysis. The results of the survey indicated that the maintenance managers has the potential to improve the secondary school building conditions, if the Government can make provision for maintenance policy and spell out the strategies.

Keywords: Assessment, maintenance policies, maintenance strategies, public secondary schools and buildings.
CHARACTERISATION OF COCONUT SHELL NANOPARTICLES USING ELECTRON MICROSCOPES

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Assessment of charge ratios (CR) on the particle sizes and morphology of the ball-milled coconut shell nanoparticles (CSNPs) was studied. Electron microscopy and X-ray diffractometer were used for particle characterisations. Results indicated that CSNPs have different morphologies and orientations at different CRs. Result of particle size determination using transmission electron microscope showed that a minimum size (0.89 nm) of CSNPs was obtained at 5.0 CR such that further increment in the CR enhanced the Vander Waal’s energy (surface energy) leading to integration of the extremely fine particles (0.89 nm size) rather than further breakage. The decrease in the number of peaks as depicted by X-ray diffractograms when the CR increased is an indication of crystalline-amorphous transformation.

Keywords: Electron microscopy; Amorphous materials; Nanocrystalline materials; Vandal Waal’s energy; Powder technology; X-ray techniques

A UNIFIED PERSPECTIVE ON FLOW IN POROUS MEDIA

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In the last two decades, there has been an exposition of interest in the use of transport in porous media. We present coherent and unified flow explanations for the various scopes of standardisation. It is clear from literature that the date of this recognition and use in variety of applications lag behind for decades. The problem of exchange of information and ideas between various fields is a real one.

A peculiar difficulty of flow in porous media is that there is no clear-cut in the passage of flow and this can be quite irregular in several fields of natural science and in a large number of branches of technology. The exposition includes fluid mechanics, soil science, surface and colloidal physical chemistry, physiology, rheology, geophysics, hydrology, soil mechanics, agricultural engineering, petroleum and chemical engineering, groundwater engineering, metallurgy, ceramic, wood, paper, textiles, leathers, cement, food and solid fuels and so on. Almost inevitably, fragmentation has provided wide variations of flow in porous media. This paper provides remarks on the consequence of this fragmentation and certain basic concepts of this flow have relevance in many distinct fields. Moreover, it seems unrealistic to expect a wholly uniform flow in porous media to be acceptable in all fields. This work recognised that some care must be exercised in relating works from different fields to some scope of unified or standardisation that maybe acceptable by some of these expositions.
CHARACTERISATION AND NUMERICAL INVESTIGATION OF SOME CO-FLOW PROBLEMS IN OIL RESERVOIRS

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Formation damage is an undesirable problem that occurs most frequently within invaded zone of oil wells. Most of the existing investigations on the causes of damage are based on empirical relations and experimental analysis and since restriction of fluid flow in the invaded zone is inevitable. There is the need to develop a model capable of reducing the damage involving the flow of two immiscible fluids in porous media. This study investigates the potential causes that give rise to loss of reservoir properties which restrict flow of fluids during production. Reservoir characterisation is employed coupled finite difference method on partial differential governing equations. However, the model equation that governs reservoir properties incorporated characterisation of static property estimation that allowed the governing equations to accurately predict dynamic property. The results obtained were compared based on characterisation and the governing equations. Results indicate that recovery efficiency increases the accuracy of fluid flow in the invaded zone. The new model yield results closed to the static property predictions which enhance the fluid flow. This results show reliability of reservoir properties is coherently preserved. Results revealed that the model equations were able to reproduce its dynamic flow properties. This shows that the results obtained minimised or reduced the impact of damage since the success of these measures indicate accurate predictions of history matching with the existing predicted reservoir performance.

USER PERCEPTION AND BEHAVIOUR IN RELATION TO PROVISIONS OF SCHOOL BUILDINGS; A DRIVE FOR EFFICIENT SCHOOL PROVISIONS IN LAGOS

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Energy provisions do not only represent a high percentage of the running cost of any building, it also has a major consequence on the comfort of the occupants. A reasonable amount of research has been carried out on energy savings, low carbon designs in buildings through optimised building shape and form, improved building envelopes, management systems and the use of energy saving gadgets. Yet, much is be desired with the actual performance of buildings after they have been occupied. This is known as - the energy performance gap. This paper seeks to address pertinent questions such as how can sustainable interventions give primacy to user behaviour. How can occupancy feedback provide better facilities- It must be understood and influenced positively; what are the factors that affect human behaviour in buildings? A case was made of a research in carried out in selected schools in Nagpur, Central India, and the approach was analysed for its inclusion in local research in this field of interest. Finally, it is hoped this research will help.
emphasise the import of users’ perceptual responses to their learning environment, and help recommend parameters for the provision of future facilities.

*Keywords*: Perceptin, behavioural, low energy use, energy performance gap, POE

15/EVN/02

**LAND ADMINISTRATION REFORM IN LAGOS STATE**

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Land registration system is a necessary element to be considered in a developing market economy as it is the most effectively used and exchanged when the rights to land are registered. This paper assessed procedures for land titling and registration in the study location; identified problems critical to land registration reform as well as assessment of Electronic Document Management System (EDMS) with a view to evolving appropriate projections on the impacts of Electronic Document Management System on title registration in Lagos State. Population for the study includes practicing firm of Lawyers and Estate Surveyors and Valuers out of which the sample size was systematically drawn. Land Bureau officials were also interviewed as such, the study employed both qualitative and quantitative data while mean item score, t-test and factor analysis was used to isolate critical factors germane to land titling and registration. The paper outlines the challenges of land registration and titling as lack of institutional framework/ ambiguous legal framework, high land taxes/charges and inadequacy of technical skills/competent staff in the study area. Furthermore, EDMS is seen to have improved land registration administratively. However, it has not aided land dispute reduction nor has it increased the number of applications processed substantially.

*Keywords*: Challenges, EDMS, Effectiveness, Land title, Registration

15/ENV/03

**LAND USE MIX IN THE CLASSIFIED RESIDENTIAL AREAS OF LAGOS METROPOLIS**

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The struggle for space in Lagos within the various uses has resulted in the overlapping of the various land uses. The pressure on the existing buildings has resulted in regular change of use in major corridor especially in the study area. This paper presents the mix of informal commercial activities with the residential building in residential areas of the Lagos metropolis, Nigeria. The study relied largely on primary survey to elicit information from 975 residents in the classified residential areas of the Lagos metropolis using
disproportionate sampling technique. Data from existing literature were adopted in appropriate instances to enrich the study. Analysis of data was carried out with the use of both descriptive and inferential statistics. Logistic regression analysis was employed to investigate the degree of mix of commercial activities with residential building of the study area. The study found out that land use mix characterised the entire landscape of Lagos Metropolis though at varied proportion. Minor conversion, even conversion and major conversion characterised the low, medium and high residential densities respectively. The study recommends and concludes that at regular interval of residential plots; provision should be made for informal commercial activities to cater for the petty needs of the community in a way to enhance the cityscape.

**Keywords:** Land Use Mix, Classified Residential Areas, Informal commercial activities, minor conversion, even conversion, and major conversion.

15/ENV/04

**VIRTUAL MOBILITY USAGE AND TRAVEL BEHAVIOUR OF POST-GRADUATE STUDENTS IN UNIVERSITY OF LAGOS**

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Based on previous studies of relevant authorities, most Urban and Regional travels have been dependent on physical travels without considering other alternatives like virtual mobility usage. However, this study investigated the influence of Information and Communications Technology on travel behaviour of Post Graduate Students in the University of Lagos. The study used questionnaire as an instrument for data collection on respondents’ travel pattern and virtual mobility usage. The study used the total number of students within the halls as the sample frame (515). The sample size was 21.3% (110 students). The sampling technique used for this study was the stratified sampling method. The sampling procedure entailed the identification of Unilag postgraduate halls of residence, identification of students in each block and selection of respondents for the sampling. Data were analysed using frequency tables and spearman’s rank correlation. The study revealed that majority covered a travel distance of >2500metres and spent more than 2 hours on their daily trips with a travel frequency of >9 single trip daily. Most of them spent more than ₦150 as daily travel cost. Most respondents used phone calls among others with a frequency usage of > 9 times daily. Daily usage complemented were <4 trips and also cancelled trips were >9. Inferential analysis revealed that, the higher the usage, the higher the physical trips made (n=110, r=0.270, p<0.01). The study concluded that Information and Communication Technology has effect on the travel behaviour of post graduate students in the study area with recommendations such as the enlightenment of stakeholders on the benefits of public engagement in virtual mobility usage with a view to reducing traffic on the roads.

**Keywords:** Virtual Mobility Usage, Travel Behaviour, Post-Graduate Students
15/ENV/05

INFLUENCE OF FM ON OCCUPANCY IN RESIDENTIAL PROPERTIES IN IKOYI, LAGOS

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Residential occupancy is affected by the quality of available facilities, thus sustaining occupancy in residential properties is vital. Facilities management (FM) seeks to address this as it integrates people, place, processes and technology. This study appraised the influence of facilities management on occupancy in residential properties in Lagos. The method adopted for data gathering includes the use of both secondary data and primary data (structured questionnaire). The target population for the study are occupants of selected residential properties in Ikoyi, namely Abebe Court, Bourdillon Court, Trenchard Place and Macdonald Court. Ikoyi was purposively selected because of the presence of most FM practitioners within the area. A total of 100 questionnaires were administered to occupants of the properties out of which only 80 were analysed due to their consistency. Frequency table, mean score, Pearson’s correlation analysis and simple regression analysis were used for data analysis. The study revealed that the fact that a facility is adequate does not mean it will conform to occupants’ requirement. However, the regression model revealed that if facilities conform to occupants’ requirement, there will be an increment of 39.3% in the wellbeing of occupants. It is therefore highly recommended that investors should provide facilities that conform to the need of occupants in their properties. Also, robust programmes within the context of strategic plans should be devised by FM outfits for the effectual management of facilities.

Keywords: Facilities, Facilities Management (FM), Occupancy, Residential Properties, Ikoyi

15/ENV/06

AS IN SCULPTURE SO IN ARCHITECTURE: A TREATISE FOR YORUBA AESTHETIC PHILOSOPHY IN PUBLIC SPACE DESIGN

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Western picturesque discourse oscillated from classical notion of “as in painting, so in poetry” to the romantic concepts of “as in poetry, so in painting” and then to “as in painting, so in architecture”. This paper explores Yoruba sculpture art philosophy to theorise design principles that may be used in contemporary sense of place conscious urban green infrastructure hubs resilient to cultural dynamism. Unlike Western aesthetic philosophy Yoruba, indeed African, aesthetic ideology did not reside in the form of art works but in “behaviour in beauty Synthesis”. Preference is given to inner beauty which is the real essence of art works. It is a general consensus that art works have in built life force (ase) that drives the religious and corresponding socio-political activities. Since ‘ase’ is defined as life force, it is the same as ‘prana’, ‘chi’, ‘aura’ or ‘subtle earth energy’. ‘Ase’ is therefore the fundamental Yoruba aesthetical tool that artists used to trigger emotional response from the viewers.
Public spaces design proposition focus on making available ‘ase’ on the landscape for the wellbeing of the people. The landscape is therefore liable to manipulation during design process to achieve desired harmony through the appropriate placement of ‘shape powers’ including Yoruba cosmogram, iconographic motifs, symbols, signs, chosen form and cultural colour scheme to harness desired earth energies. ‘Ase’ centred Yoruba environmental design proposition, like other forms of landscape, is a cultural construct reflecting underpinning ideologies in local place development that should enhance attachment.

**Keywords**: Picturesque, Sculpture, Aesthetic, ‘Ase’, Shape Power

15/ENV/07

**RISK ALLOCATION PATTERN OF NIGERIAN CONTRACTORS**

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Success in contracting business requires understanding of the nature of risk inherent. The ability of a contractor to match risk actuality and expectation will be an indispensable instrument in risk management. This paper examines the xpected and actual risk allocation pattern of construction contractors in the Nigerian construction Industry. It also assesses the risk allocation pattern of Indigenous as well as foreign owned construction firms. The study captured the pattern of expected and actual risk allocation of the contractors through the use of structured questionnaires administered on contractors drawn on stratified sample basis. The population consists of contractors drawn from Federation of Construction Industry (FOCI) directory. The study suggests that most external unpredictable risk (EUR) is expected to be allocated to the owner but is actually shared between contractor and owner. Risks categorised as external predictable risks (EPR) were expected to be allocated to the contractor and in reality were so allocated. This pattern holds for risks categorised as internal non-technical risk (INTR) and internal technical risk (ITR). The contractor was also found to bear risks on the legal risk (LR) category as against the expectation that they should be borne by the client. In all, the study suggests that there is no significant difference in the expected and actual risk allocation pattern of the contractors. Further, there is no significant difference in the risk allocation pattern either as expected or experienced between foreign and Nigerian owned and managed construction firms. Lastly, the size of construction firms’ turnover appears not to have significant impact on the pattern in which risk were allocated. The contractors perceive the Nigerian construction environment as hostile by allocating more risks to the contractor. The risk allocation pattern cannot promote a win-win philosophy which has been found to be necessary for performance in the industry and commerce. The study enables stakeholders in the Nigerian construction industry to evaluate the level of construction business environment in relation to risk burden and thereby strategise on the best approach that ensures successful project delivery. It also captures contractors’ expectations on risk allocation and provides insight into a possible means of contract cost reduction by eliminating contingency through risk allocation based on contractors’ perception.

**Keywords** - Risk allocation, Expected unpredictable risk, Expected predictable risk, Internal non technical risk and Legal risk.
UTILISATION OF PUBLIC PRIVATE PARTNERSHIP (PPP) FOR SOCIAL INFRASTRUCTURE PROVISION IN NIGERIA

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Public Private Partnership (PPP) has been widely used to deliver public infrastructure and services in most developed countries like UK, Australia and Canada. However in Nigeria, the implementations of PPP for social infrastructure have not been fully adopted despite the benefit of the procurement system in terms of the usage of private sector finances to provide public infrastructure. This study thus assesses the utilisation of PPP for social infrastructure in Nigeria. Cross-sectional research design is used for this study and the population comprises of professionals involved in the execution of PPP projects, government agencies and parastatals, public and private institutions, and contracting organisation. Convenience sampling technique method is used for this study of which 68 questionnaires were distributed and 49 was returned and used for the analysis, given an average response rate of 72%. The study shows that the level of utilisation of PPP procurement system is very low as most respondents have not been involved in PPP procurement system in Nigeria, this is attributed to the fact that this procurement system is yet to be fully embraced and adopted as a means of providing critical infrastructural need although professionals are quite aware of the procurement system.

Keywords: Development, Privatisation, Public Private Partnership, Social infrastructure

ICT ADOPTION AND SPATIO-TEMPORAL EVOLUTION OF LAGOS

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The influence of Information and Communications Technologies (ICT) on every aspect of human endeavour has become undoubtedly evident, and the form of the urban space is no exception. The interplay between the form, structure and pattern of the city and the prevailing technologies is therefore becoming discernible. The analysis of the spatio-temporal evolution of the Lagos city form as influenced by ICT between 1860 and 2010 is therein quantitatively undertaken using secondary data. Time series analysis of satellite imageries of the study area is adopted to establish the morphological change of Lagos within the context of ICT adoption over the study period. As a rapidly urbanizing environment, typical of the developing global south, Lagos has expanded demographically and spatially in response to varying prevailing technological regimes. Increasing from a small settlement of about 25,000 populations in 1866 to a global city of about 20 million in 2010. Despite the tremendous demographic growth and rise in tele-density from less than 5% in 1991 to about 50% in 2010 and over 90% in 2013, there is yet to be a discernible correlation between the physical manifestation in the morphology of the study area and ICT adoption. A juxtaposition of the spatio-temporal analysis with the intensity of adoption in
the study area will reveal an ICT penetration hotspots map or template capable of informing decision making on ICT infrastructure provision and other urban governance indicators.

Keywords: ICT, City Form, Adoption, Morphology, Lagos

15/ENV/10

TASK CHARACTERISTICS, TRAINING PRACTICES AND TASK PERFORMANCE OF PROFESSIONALS IN CONSTRUCTION FIRMS

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Task performance of construction professionals depends on situational factors such as task characteristics and training. The study therefore aims at examining the relationship between task characteristics, training practices and task performance of professionals in Nigerian construction firms with the view to improving their performance. Task characteristics of construction professionals include skill variety, task identity, task significance, autonomy, feedback, task analysability, task difficulty, task routineness, task complexity and task structuredness. Training practices are training needs assessment, training delivery, training evaluation and training transfer while task performance of professionals was measured as cognitive ability, job knowledge, job skills and task. Data for the study is based on preliminary pilot study of a part of an on-going Ph.D research work. Pretest results indicate that a weak positive relationship exists between task characteristics and training practices and a positive relationship exists between training practices and task performance. The study therefore proposes that the development of a model that will show the relationship between task characteristics, training practices and task performance will assist construction firms to predict the performance of their employees.

Keywords: Task characteristics, Training practices, Task performance, Construction professionals, Nigeria.

15/ENV/11

URBAN HOUSING SUPPLY: CO-OPERATIVE HOUSING AS THE THIRD WAY

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The purpose of this paper is to provide information for support for the integration of co-operatives into urban housing supply. The paper examines the activities of various co-operative housing around the world, and then goes further to establish the relevance of co-operative societies in housing delivery in Lagos State. A small, indicative sample of 78 members of co-operative societies was randomly surveyed with the semi-structured questionnaire. Findings show that even though most of the respondents were senior staff members, they were still renters and had recently collected co-operative loans to either pay their rent or continue their home construction project. However, respondents were generally
satisfied about the housing activities of their co-operative societies; as tested across the five variables of interest rates, transaction costs, payback period, and period of loan disbursement and level of collateral requested. A SWOT analysis is thereafter presented as a recommendation in further efforts to formally integrate co-operative societies into the housing delivery sector in Lagos State.

Keywords: Co-operative Housing, Housing, Housing Supply, Lagos, SWOT Analysis

15/ENV/12

EFFECTS OF CHURCH PREMISES ON RESIDENTIAL PROPERTY VALUES IN MOWE-IBAFO, OGUN STATE

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In recent time, there has been an astronomical increase in the number of churches located within residential areas and it comes with its attendant effects. The study looks at the effect of church buildings on residential property value. In achieving its laid out aim, officials of the churches and residents of adjoining properties were interviewed through a structured questionnaire which sampled their level of satisfaction with the activities of the church premises and the externalities generated from them as well as their willingness to pay higher rent in order to relocate to another location not in close proximity to church premises. Study revealed that church premises have significantly negative effect on adjoining residential property value. However, the residents are not economically capable to relocate to locations not affected by this negative externality because they enjoy low rent in their current location. Proactive and reactive measures to reduce the effect of negative externality were recommended.

Keywords: Church Premises, Externalities; Amenities; Residential Property Value;

15/ENV/13

APPROPRIATE DEFINITION AND VALUATION TECHNIQUES FOR SUSTAINABLE BUILDING: AN EMERGING PROPERTY MARKET PERSPECTIVE

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This study assesses the criteria guiding the conceptualisation of sustainable buildings as found in academic literature and proposes a holistic, lifecycle based conceptualisation of sustainable buildings; which can then be localised as necessary.

The study is based on a stratified random sampling survey of practicing estate surveyors and valuers in forty two estate firms in Lagos; who were provided with a semi-structured questionnaire. The study highlights the potential limitation of conventional methods in capitalising sustainability into properties in emerging markets. It was found that the most
readily available data inputs for the valuation of a sustainable building related to the cost method. It was also found that respondent valuers possess limited experience in the valuation of buildings with core environmental features. Finally, there were inconsistencies in the manner the valuers accounted for each sustainable feature of the property.

Given the state of market maturity, these findings indicate that the cost method presently remains the most expedient method of valuation of such properties. It is recommended that specific training for valuers on sustainability, continuous professional development, and systematic information gathering and sharing within the market must be strategically carried out to adequately capture the impact of sustainability on property value.

Keywords: Surveyors, Buildings, sustainability

15/ENV/14

FACTORS INFLUENCING HOUSEHOLDS’ WASTE SEPARATION BEHAVIOUR IN LAGOS METROPOLIS

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Numerous studies on Municipal Solid Waste Management are hinged on the technical, administrative and institutional dimensions which failed to develop the kind of Waste Management strategies needed to encourage households to understand and participate efficiently in sustainable waste management practices. The problem of study is to examine the extent to which the factors such as technological factors, economic motivations, socio-cultural factors and government policy, determine households’ participation in separation and non-separation of solid wastes before collection and disposal. Using a multi-stage sampling technique, the residential neighbourhoods of the local government areas in Lagos Metropolis were classified into low, medium and high residential zones for data collection. A structured questionnaire was administered on households of 388 residential housing units and data were analysed using descriptive and inferential (regression) tools. The findings revealed that the households (14.70%) that separate wastes before disposal are highly insignificant and the reasons or factors for non-separation of wastes are determined by time consuming ($R^2 = 0.517$, $p < 0.05$), payment of collection fees ($R^2 = 0.118$, $p < 0.05$) and no incentive ($R^2 = 0.025$, $p < 0.05$). The conclusion is that households in Lagos Metropolis do not segregate their wastes before disposal because they considered it time consuming and no incentives as they also pay for the wastes collected. Therefore, there is need to adopt a sustainable wastes management strategy whereby adequate provision of wastes recycling banks is made to ensure reduction in time for wastes sorting, reuse of wastes materials to reduce environmental degradation; and proper enlightenment of wastes segregation for wealth creation and economic support for households’ livelihoods.

Keywords: Solid wastes, Wastes separation, Waste recycling, Wealth creation, Lagos Metropolis
IMPLEMENTATION AND USE OF OPEN SPACE IN LAGOS RE-HOUSING AND IJAYE HOUSING ESTATES, LAGOS

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Preservation and sustenance of urban open spaces has been a growing concern for scholars in environmental planning in recent times. This is as a result of neglect of poor implementation of open spaces as proposed in the master plan of a city and neighbourhood, which invariably affects the livability of the residents. Hence, this paper examined issues relating to implementation and use of open space in residential neighbourhoods in Lagos State.

Using both primary and secondary sources of data, the study identified all public residential estates in Lagos State. Variables such as ownership, year of establishment, size of the estate, availability and size of open space (as proposed and built), land use characteristics, residential density, existing condition and use of open space were gathered in the survey. GIS tool, descriptive table and chi-square were used to determine the percentage loss of open space and conformity to planning standard in the study area.

This study revealed that open space was not provided in some residential estates. Also, provision of open spaces in some estates was not adequate in relation to physical planning standard. These facilities had equally suffered loss and conversion to other land use overtime. Factors such as funding, activities for all users and management were responsible for these issues. This paper however recommended conscious and adequate attention to the planning and management of open spaces like other land uses in Lagos State. Adequate funding and maintenance of facilities will better enhance patronage, which will ensure healthy citizen and invariably protect the centres from further loss and conversion.

Keywords: Open spaces, planning, implementation and residential neighbourhood

EFFECTS OF CHANGES IN THE PATTERN OF LAND USE IN SURULERE LAGOS, NIGERIA

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The paper examined the effects of change of land use in Surulere neighborhood of Metropolitan Lagos. The specific objectives to achieve the aim of the study include identification of the trend of change of land use in Metropolitan Lagos over the past ten (10) years and its effects on the pattern of land use. This study adopted a survey research design in which systematic random sampling technique was used to select 315 buildings (a household per building) from the total of 6,522 buildings identified through satellite imagery of the study area. A structured questionnaire to elicit information on socio-economic characteristics of respondents and the level of involvement of government in the design and implementation of planning laws in the study area was administered on the households. Data obtained were analysed with descriptive statistics. The study revealed that
there have been remarkable changes in land use pattern from residential to commercial land use and this had led to corresponding changes in property values in the study area. This has created problems of traffic congestion, over stretching of infrastructural facilities, noise pollution, waste generation, uncontrolled high rent, breakdown of social amenities, health related problems etc. The research recommends the need for adequate land use planning to take care of the changes brought about by increased commercial activities. In addition, there is a need for town planning authorities to monitor the processes encouraging the changes in land use to prevent its negative effects on the environment.

**Keyword:** Change of use, Neighbourhood, Land use, Surulere Lagos

15/ENV/17

**INTEGRATING GREEN ARCHITECTURE WITH APPROPRIATE TECHNOLOGY FOR SUSTAINABLE SMART CITIES**

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This paper evaluates innovative ways of integrating green architecture with appropriate technology for sustainable development of smart cities. A city can be defined as ‘smart’ when investments in human and social capital and traditional (transport) and modern (ICT) communication infrastructure fuel sustainable economic development and a high quality of life, with a wise management of natural resources, through participatory action and engagement (Caragliu and Nijkamp - 2009).

As at today, approximately half of the world’s populations live in cities. Global climate change in this digital-revolution era and huge population explosion in many urban areas have made studies on sustainable urban growth critical for optimum development of cities. Methodology involves literature reviews on Green Architecture and Appropriate Technology with primary and secondary data collection on Eko Atlantic City. This paper is important in that it provides a framework for integration of appropriate technology and green architecture for sustainable development.

The paper recommends Integrated Project Delivery (IPD), Building Information Modeling (BIM), Green architecture (GA) and Lean Construction (LC) for ensuring sustainable development based on the appropriate technology available in Lagos.

**Keywords:** Appropriate Technology, Eko Atlantic City, Green Architecture, Smart Cities. (235 words)

15/LAW/01

**TUNNEL VISION PROBLEM WITH THE LEGAL REGIME FOR INSURANCE INTERMEDIARIES IN NIGERIA: A CASE FOR REFORM**

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The paper argues that the present legal regime for the regulation of insurance intermediaries in Nigeria is undermined by tunnel vision problem. In particular, the legal regime, as it is,
seems to be tailored in favour of the insurers and intermediaries’ narrow interests, which is economic rent seeking, wealth creation and economic portfolio. Unfortunately, the interests of the insuring public, which include accessible and affordable insurance products and services needed to promote socio-economic risk control mechanisms, remains largely unprotected. The paper amplifies the fundamental legal issues in nurturing this tunnel vision and the regulatory dangers it continue potend. It concludes by making a case for the reform of the present legal regime in a manner that will mandate the balancing of the interests of insurers and intermediaries with the interests of the insuring public.

**Keywords:** Reform, Regime, Insurers

15/LAW/02

**MICRO-INSURANCE AS A SOCIO-ECONOMIC TOOL FOR NATIONAL TRANSFORMATION: A LEGAL PERSPECTIVE**

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**Background to the Study**

Micro-insurance is one of the several socio-economic tools that recently evolved for the purpose providing affordable risk control mechanism for persons involve in micro and small scale enterprises - the low-income households. It is a financial model that is built on two main pillars. The first is the social pillar, which provides a new insurance service tailored specifically for the low-income households. The second is the economic pillar, which considers low-income households as a new market opportunity that was hitherto ignored and remained largely untapped. Thus, it is a financial strategy, which is designed to enable the low-income households to mitigate risks and reduce vulnerability to risks, thereby protecting their means of livelihood, while at the same opening up new market for financial players. At policy level, therefore, micro-insurance is an integral part of financial inclusion framework linked to savings and credit. In order to make micro-insurance a tool for meeting government’s development policy objectives, such as national transformation, several nations of the world have established, or establishing, tailored legal framework for micro-insurance regulation. It appears that the fundamental motivation for government involvement is to harness the benefits of micro-insurance sector, which is not only as a catalyst for economic development and social protection, but also in facilitating financial inclusion and sustainable growth.

Nigeria is not left out in the quest for tapping into the benefits of micro-insurance as in December 2013, the National Insurance Commission (NAICOM), an apex regulator of commercial insurance in Nigeria, released the ‘Guidelines for Micro-insurance Operations in Nigeria,’ (the 2013 Guidelines). This was anchored on some of the findings that out of a population of 168million, only 35% of the economically active households are served by the formal financial system, the remaining 65% are excluded from the formal system. In the context of insurance, only 1% (or less) of the adult households has access to formal insurance as a risk control mechanism. Thus, with the enactment of the 2013 Guidelines, the expectations are that micro-insurance sector will not only serve as financial tool for
transforming the lives low-income households, but also as a catalyst for socio-economic transformation of the country.

While it may be too early to judge the success, or otherwise, of the new legal regime for micro-insurance in Nigeria, a recent study has shown that Nigeria is still at the bottom range of global comparative chart for quality of life and economy of nations. For instance, the Failed States Index 2014 revealed that Nigeria is the 17th Fragile State out of the 178 countries analysed. This implies that Nigeria is only ahead of World’s 16 most miserable countries. In addition, Nigeria is adjudged to be 4th among the nations with uneven economic development. Many factors could have caused this state of affairs, yet, this study focus on the adequacy, or otherwise, of the present legal regime, which was designed for extracting the benefits of micro-insurance, and channeling same into national development.

In particular, this study evaluates the 2013 Guideline as well as other related regulations for micro-insurance in Nigeria. The aim is to ascertain whether they are adequately designed to harness the benefits of micro-insurance as a socio-economic tool for national development; and where they are not, proffer recommendations for reform. This is relevant for at least three reasons. First is to clearly articulate the nexus between micro-insurance and national transformation. Second is to situate the role of regulation in the micro-insurance – national transformation synergy. Third and last, is to ascertain whether the present legal regime is sufficiently designed to enable the target population, the government and other financial players to harness the benefits of micro-insurance as a socio-economic tool for national transformation.

15/LAW/03

RESEARCHING FOR NATIONAL DEVELOPMENT: THE FEMINIST ALTERNATIVE

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Research is a systematic study of a subject, it seeks to define, describe and explain what the subject matter is, and it delineates its core idea from other similar phenomenon. Research examines various debates and issues embedded within the subject to come up to a logical conclusion in its findings. Development means ‘to bring about sustained improvement in the well-being of the individual and to bestow benefits on all. National development therefore entails a development encompassing in which no section of the state is left behind in its sustained improvement and well-being. Research for national development has hitherto been conducted along a certain path of enquiry namely: doctrinal research which entails the organisation of proposition, drawing on resources which are available in the library and drawing up conclusion from these materials and empirical research which entails drawing up of instruments such as questionnaires, surveys and interviews to arrive a proposition which can be verified. Feminism is a challenge to the disparity between men and women and it is defined as a struggle for liberation of women and it encompasses epistemologies, methodologies and theories and modes of activism that seeks to bring to end all forms of women oppression in the society. Feminist research method is essentially ‘asking the woman question’.
The paper seeks to propose an alternative to research for national development in the sense that ‘asking the woman question’ is both a political, social and legal dimensions of women’s lives in society.

15/LAW/04

TRANSFORMING NIGERIA’S LEGAL ORDER THROUGH SOCIOLOGICAL JURISPRUDENCE: RESOLVING THE CONFLICT BETWEEN LAW AND CULTURE

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One of the most interesting and challenging features of jurisprudence in most countries of the world has been the emergence of sociological approaches to problems of law. In other words, legal works have tended to reflect the trends to be found in sociology. It is concerned with the effect which law has on society on the one hand and the effect which society has on law on the other hand, hence law has been said to be a superstructure that has economic and social base and can, therefore, not be appreciated in isolation as it does not exist in vacuo. Sociological Jurisprudence is a reaction to the extreme positivism of the analytical school. The purpose of law and the role it is playing in society is the key element of Sociological Jurisprudence. The members of this school, ranging from Comte, through Jhering, Duguit, Ehrlich to Roscoe Pound, have diverse approaches in relation to this.

The makers of law, whether at the national or the State levels, in Nigeria do not take cognizance of the socio-cultural and economic peculiarities of the country. The laws on bigamy, burial of corpses, slaughtering of animals, burning of bushes are very few examples of these laws which are anti socio-cultural realities of the Nigerian society. It is either most of the Nigerian legislations are tailored towards the colonial English legislations or are not in tune with the socio-cultural realities and peculiarities of the Nigerian society.

15/LAW/05

TOWARDS NATIONAL TRANSFORMATION OF THE LIABILITY AND COMPENSATION REGIME FOR AIR ACCIDENTS IN NIGERIA

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In recent past in Nigeria, we have been serenaded by renovation works which have face-lifted several domestic aviation terminals in the country. A grand contract-award spree by the Federal Ministry of Aviation underlines the renovations. Important and commendable as the renovation works are, we are spending money on rebuilding the airports while airplanes are dropping out of the sky. This tells that the more important aspects of a credible aviation reform in the country have been sidestepped; the compensation of victims of air accidents. The average passenger using air travel is almost certainly ignorant of the extent and limitations on recovery which are imposed as well as the uncertainties and possible injustices involved in the limitations provided by regulations in Nigeria.
This research deals with the role of aviation in national transformation in Nigeria and the rules regarding air carriers’ liability for compensation for accidents while also considering the effect if any of the liability regime for international flights in Nigeria. The focus will be the carrier’s liability toward passengers on an aircraft and the compensation available to victims for damage and injury on board. The purpose is to give an account of the common international rules and to clarify the problems with interpretation of the carrier’s liability in Nigeria. It will focus on the Civil Aviation Act 2006 and the Montreal Convention of 1999 a regime repealing the Warsaw Convention 1929.

The paper argues that a change in policy focus is important and that a substantive change from protecting the airline industry to protecting the passenger and their safety. It also makes a case for a domestic regulation of accidents and compensation regime similar to the Montreal Convention and that courts faced with claims under Civil Aviation Act and the Montreal Convention must undertake a materially different analysis and approach to interpreting and enforcing rights of victims, similar to approaches to such claims by advanced jurisdictions.

Keywords: Air accidents, Air carrier’s liability, Compensation, Montreal Convention, Domestic Regulation.

15/LAW/06

CHILD JUSTICE ADMINISTRATION UNDER CHILD RIGHTS LAW OF LAGOS STATE

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The main objective of this study was to assess the implementation of Child’s Rights Law (CRL) after its introduction in 2007 to identify any challenges in the application of the justice provisions by different child justice administrators. Anchoring on a system theory adapted from that of child protection, the study adopted a qualitative approach to collect both primary and secondary data through desk review of extant literature, key informant interviews and focus group discussion respectively. The study investigated police officers, Judges and Magistrates in four family courts and social workers in four custodial institutions. The study found that only two Specialised Children Police Units were created, police officers in these units were found untrained to handle the children matters, diversionary measures had never been used by the police, precarious court sittings days due to the irregular and non attendance of the assessors, no new family courts were constructed, conflicting provisions in sections 138 and 151, some laws did not prescribe penalties for the violators, the conditions in the custodial institutions had improved and the treatment of the juvenile offenders was better than prior the enactment of the CRL. Major challenges mentioned by all the categories of respondents were ignorance of the law by the general public particularly parents and also corrupt practices of police officers especially in cases of rape and sexual abuse of young girls. Enlightenment campaigns should be organised for the general public among others
Available literature acknowledges rampant and violent religious conflicts in Nigeria. Scholars have canvassed diverse solutions. However, religious conflicts persist. This research offers new research directions through the interrogation of the basis for harmonious religious and peaceful co-existence in South West Nigeria. The paper undertakes an analytical enquiry into the nature and enjoyment of right to religious freedom in a secular and pluralistic society. It examines national and international legislative framework for the protection of religious freedom and diversity. Despite the fact that Christianity, Islam and other major religious tenets espouse tolerance and peaceful co-existence, available literature suggest that religious conflict is on the rise across the globe. This paper investigates the scope of the right to religious freedom and the factors that instigate and often sustain religious conflict. It investigates the relationship between enjoyment of the freedom of religion and religious conflict and why the enjoyment of religious rights often instigate conflict and generate so much divisiveness. Regardless of the many violent religious and religious motivated conflicts that have been documented by existing studies in Nigeria, the finding of this paper is that South West Nigeria has been free of violent religious conflict. Using South West Nigeria as a case study and in a new research direction, the paper examines how religious harmony and peace can be maintained in religious diversity. This paper recommends the adoption of South-West Nigeria model for religious tolerance and peaceful co-existence. Overall, it is shown that there are a variety of ways of enjoying religious freedom without resulting in religious conflict.

**Keywords:** right to religion, freedom of religion, religious tolerance, religious diversity, religious conflict and South-West Nigeria

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**DEVELOPMENT OF TOURISM AS A VITAL KEY TO A POSITIVE NATIONAL TRANSFORMATION**

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**Background**

In theory, every society strives for equity in order to promote a healthy bonding of citizens within its varying strata of diversity. This bonding cannot be achieved without interaction within and between citizens. When thus achieved it draws together all other positive actions of the given society- a bond that extends to treatment of visitors and flourishing of economic activities.

True interaction can only be realised in an environment of fair play and equity. An environment with these attributes is one which allows for and encourages an understanding of cultural and behavioural patterns that matter and are acceptable to the individuals and
community. One undeniable instrument of empowerment is meaningful interaction. The latter can only occur through willingness to discover, with the corollary; conducive and enabling environment to be discovered. Tourism if properly engaged can become an enviable engine for economic empowerment and national transformation. This research therefore engages the reinvigoration and re-positioning of Nigeria as a haven for tourism – one key impetus for a positive national transformation.

Statement of the Problem:
Despite the fact that Nigeria is a great country with enviable weather conditions, towns and villages of scenic, natural and cultural beauty many Nigerians are always resident in particular locations within Nigeria with occasional visits to native homes. Holidaying is often very absent in the affairs of many Nigerians and if it occurs at all, is often taken outside the shores of Nigeria. Education of citizens on the role of holidays as an aspect of well being appears missing. Also, missing is the awareness of the full potentials of many areas; towns and villages within the Nigerian State to provide effective leisure and holiday locations.

15/PHM/01

CHEMICAL COMPOSITION, ANTI-HELIcobacter pylori AND ENHANCEMENT OF TECHNOLOGICAL PROPERTIES OF NIGERIAN PROPOLIS EXTRACT


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Background: Propolis, a sticky and usually dark brown complex resinous natural product commonly used by bees for building and repair of the hive, has been used in folk medicine since ancient times to treat several ailments. Infact, it is well-known for its beneficial and preventive effects on human health, mainly for antioxidant, antibacterial, antiviral, antifungal, anti-inflammatory, and anticancer activities. Propolis has also been tested as a food preserver due to its bactericidal and bacteriostatic properties, and most of its components are natural constituents of food and recognised as safe substances. Furthermore, it has been extensively marketed by the pharmaceutical industries as an alternative medicine and as a health food in various parts of the world. Considering all these aspects, there is a renewed interest in the composition of propolis and its biological activities in the past decade

Objective: To evaluation more biological properties of Nigerian propolis (NP) and to improve its dissolution characteristics for better delivery in biological systems.

Methods: Chromatographic and spectroscopic techniques were used for isolation and structural elucidation of the compounds in NP. The anti- Helicobacter pylori activity of NP was determined by Agar dilution method according to the methods defined by the National Committee for Clinical Laboratory Standards while Enhancement of Technological properties of NP was done using Sodium-carboxymethylcellulose matrix.
**Results:** Methanol extract of Nigerian propolis was subjected to chromatographic analysis leading to isolation of four pterocarpans, one diarylpropane, two isoflavans, and one prenylated flavanone whose structures were elucidated using spectroscopic methods including 1D and 2D NMR experiments as well as ESIMS analysis. The extract demonstrated interesting antibacterial activity against *Helicobacter pylori* using agar dilution method with MIC and MBC 25 and 95 mg/mL respectively. Sodium-carboxymethylcellulose microparticle of the extract generated using spray drying resulted in powder with higher *in vitro* dissolution rate of the bioactive constituents in simulated gastric fluid compared to non-encapsulate propolis extract.

**Conclusion:** Methanol extract of Nigerian Propolis (NP) has potent anti-*Helicobacter pylori* activity. Its encapsulation with Na-CMC through spray drying resulted in product with improved functional and technological characteristics. Chromatographic analysis of the extract gave four pterocarpans, one diarylpropane, two isoflavans, and one prenylated flavanone.

**Keywords:** Nigerian propolis, isoflavonoids, *Helicobacter pylori*, Sodium-carboxymethylcellulose matrix, *in vitro* dissolution.

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**Comparative Evaluation of Physicochemical Properties of Some Commercially Available Brands of Metformin Hydrochloride Tablets in Lagos, Nigeria**

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**Background:** There are several generics of metformin hydrochloride tablets available within the drug delivery system globally. Availability of numerous brands of metformin tablets in the Nigerian drug market today places health practitioners in dilemma of generic substitution. The objective of the study was to determine the biopharmaceutical and chemical equivalence of fifteen brands of metformin tablets in Nigeria using in-vitro tests.

**Methods:** The physicochemical equivalence tests carried out on the fifteen brands of metformin hydrochloride tablets include uniformity of weight, friability, hardness, disintegration using the United States Pharmacopoeia methods. The dissolution rate and disintegration time were determined in simulated gastric fluid (SGF). Similarity factor (f2) was used to assess bioequivalent between the innovator brand and the other brands. The physicochemical tests carried out include uniformity of weight, hardness, friability, disintegration and dissolution while the Ultraviolet/Visible spectrophotometric method was adopted for the quantitative analysis.

**Results:** All the brands, 100%, complied with the United States Pharmacopoeia specification for uniformity of weight, disintegration, friability and dissolution tests. Brands C and D had
the highest and lowest crushing strengths respectively. Thirteen brands, 86.67%, had values within the range specified for quantitative assay in the USP while Brand A & G, 13.33%, failed the test. All the brands passed the BCS biowaiver criteria for very rapidly dissolving tablets.

**Conclusion:** Eleven brands out of the fifteen brands evaluated in this study could be regarded as being biopharmaceutically and chemically equivalent and therefore could be interchanged in clinical practice.

**Keywords:** Metformin, physicochemical test, chemically equivalent, Similarity factor ($f_2$), interchanged.

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**LACTOMIL-CEREAL BASED PREPARATION WITH LACTOBACILLUS FROM AFRICAN FERMENTED GRAINS, FOR CONTROL OF BACTERIAL DIARRHOEA IN CHILDREN**

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**Background:** Diarrhoea in children continues to be a cause for concern especially in developing countries, often with high mortality rates. This is mainly due to low immunity and poor hygiene in the age group 0-5 years. One of the major challenges is in the area of getting a “meal” to boost the immune system as well as control diarrhoea. A preparation with this dual property will help to reduce mortality in children.

**Methodology:** Five grains; *Pennisetum glaucum* (Millet), *Sorghum bicolor* (Guinea corn), *Triticum aestivum* (Wheat) *Zea mays* (corn) and *Digitalia exilis* (Acha) were fermented and *Lactobacillus* isolated. Using De-man Rogosa and Sharp medium (MRSA) samples were cultured and incubated under micro-aerophilic conditions. The isolates were tested for inhibitory activities on the bacterial agents of diarrhoea - *Escherichia coli* and *Shigella flexneri*.

**Results:** Fifty (50) Lactobacillus isolates were obtained, consisting of *L.casei* 12(24%), *L. acidophilus* 10(20%), *L. fermentum* 12 (24%), *L.salivarius*8 (16%), and *L. plantarum* 8(16%), *Lactobacillus. acidophilus* and *L. casei* inhibited *E. coli* while *L. salivarius* inhibited *Shigella flexneri*. The *Lactobacillus* species had probiotic potentials; *L. acidophilus* and *L. casei* scored 70% respectively while *L. salivarius* scored 60%.

**Conclusion:** Findings from this study has shown that *Lactobacillus* species from Africa fermented grains can serve as probiotic for the control of diarrhea, while the grains can serve as “meals” to boost the immune system.

**Keywords:** *Lactobacillus* species, fermented grains, diarrhoea.
PATIENT- AND PROVIDER- PERCEIVED FACTORS INFLUENCING HAART ACCESS IN RURAL EPE AND IKORODU LGAs, LAGOS STATE

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Background: At the end of 2013, the WHO reported that more than 11.3 million people were on ART in Low and Middle-Income Countries (LMICs). With the plan to extend this cover to more patients, it is important to study key drivers of access to and important barriers to Highly Active Anti-Retroviral Therapy (HAART) hence the need for this study.

Methods: The study was undertaken in Epe and Ikorodu LGAs. It utilised both a qualitative and quantitative method. The instrument (Semi-structured questionnaire) was self-administered to 280 PLWHAs attending HAART clinic at the two centers. Thirty eight participated in the focus group discussions. Key informant Interviews were held with the Focal Person in the Lagos State AIDS control Agency and care providers at the two Hospitals. Data from the study was analysed using SPSS 21.

Result: Respondents identified cost of treatment, transportation and opportunity costs, perceived benefits from HAART, disclosure to significant other, membership in a support group (within same LGA) and dissemination of information (especially through religious leaders) as facilitators of access. Barriers to access were identified as stigmatisation, poverty, facility-related factors, care-giver related factors, perception of harm from HAART, perception that disease is due to spiritual sources and long distance to point of care. Healthcare providers also identified Provider: Patient ratio, funding of the programme and feedback from program managers as important factors affecting access.

Conclusion: The findings support the hypothesis that factors affecting HAART access are population specific.

Keywords: HAART, PLWHA, LMIC, HIV and Access.

INVESTIGATION OF THE ANTIOXIDANT ACTIVITY AND QUANTIFICATION OF THE AMOUNT OF HEAVY METALS AND SOME VITAMINS IN CARROT

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Background: Carrot is a root vegetable from the Umbelliferae family. Carrot is a biennial plant grown for their edible root. Carrots are a good source of carbohydrates and minerals like Calcium, Phosphorus, Iron and Magnesium. It is also rich in carotene, niacin, riboflavin; thiamine and vitamin C. Food substances that are grown near highways or close industrial
plants may contain toxic amounts of metals as a result of run off effect which carries these heavy metals through the soil thereby affecting the crops.

**Objectives:** To investigate the amounts of heavy toxic metals in carrot and also to quantify the amounts of some vitamins it contains. The research also investigated the antioxidant activities of the root vegetable.

**Method:** The research investigated the antioxidant properties of carrot on the basis of the radical scavenging activity on DPPH (1,1-diphenyl-2-picryl hydrazyl), heavy metal analysis were carried out using Flame Atomic Absorption Spectrophotometer while analysis of vitamins was done using HPLC (High Performance Liquid Chromatography).

**Result:** The carrot sample analysed contained considerable amount of some toxic metals of interest and also contains a very good amount of the vitamins analysed. It also showed some antioxidant activity and test positive for most phytochemicals.

**Conclusion:** The actual concentrations of the respective heavy metals found in two parts of the *Daucus carota* samples were within the threshold limit as specified by DeStefano et al., (2010) but there was slight variation in the amount present in the root *Daucus carota* as compared to the leaf because the root had more concentrations of the metals and this could be due to the fact that the root *Daucus carota* is more exposed to these metal during plant uptake.

**Keywords:** Heavy metals, Vitamins, Antioxidant, Carrot.
resins, saponins and carbohydrates. The antimicrobial assay indicates that the extract has a high percentage inhibition as compared with the standard. It possesses antioxidant activities useful in fighting of free radicals which cause cell damage, and its constituents can be separated using thin layer chromatography.

**Conclusion:** The leaf extract of *A, mexicana* has antimicrobial and antioxidant activity

**Keywords:** Antimicrobial, antioxidant, *Argemone mexicana*

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15/PHM/07

**KNOWLEDGE OF UNIVERSITY OF LAGOS FINAL YEAR STUDENTS’ ON SELF-CARE AND INTEREST IN TAKING A GENERAL STUDY COURSE ON SELF-CARE: A PRELIMINARY STUDY**

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**Introduction:** The global burden of non-communicable diseases (NCDs) like heart diseases, strokes, cancer, respiratory diseases and diabetes, is growing at phenomenal rate. Although, NCDs has reached epidemic status in many countries, especially in low and middle income countries, it is an invisible epidemic. The course of most NCDs is amendable by its common and modifiable risk factors like healthy diet, smoking cessation, and healths monitoring activities, but these amenable risk factors are often ignored until very late in the course of the disease. According to WHO, self-care is what people do for themselves to establish and maintain health, prevent and deal with illness, which includes consideration of healthy diet, exercise, and hygiene, as well as practicing self-medication. Healthy lifestyle habits (self-care) have been shown to reduce the overall mortality from non-communicable disease (NCD), which accounts for 36 million deaths worldwide yearly. Nigeria currently has a high burden of total recorded death by NCDs at about 24% and the probability of dying from one of the four main NCDs between ages 30-70 is 20% .This burden is growing daily and will definitely affect the current crop of undergraduates, the cream of Nigerian youths and its future work force, if every opportunity is not used to intervene in this growth. The objective of this preliminary study is to assess knowledge of final year students of University of Lagos about self-care and their willingness to accept a general study course on appropriate self-care and illness prevention practices.

**Method:** This is a descriptive cross sectional survey of final year students of University of Lagos, Akoka campus as at September, 2015. A closed questionnaire was developed to assess their knowledge based on four areas of self-care: healthy lifestyle, illness prevention, and family medical history as well as self-medication practices. A fifth construct of the instrument captured interest to take a general study course on self-care. The questionnaire was tested for face and content validity as well as for reliability using the split half method (Cronbach alpha =0.65). A convenient sampling method was used in this survey. A total number of one hundred and ninety-two questionnaires were distributed, collected and analysed using SPSS version 20.
Results: The average age of the respondents was 22.4±2.98 and more than half of the respondents were males (56.3%). Although, 70% of respondents indicated they knew about self-care, four out of ten students do not know about illness prevention. Knowledge of family medical history on diabetes and hypertension was moderate at 62.8%; however, knowledge of risk factors associated with diabetes mellitus as well as hypertension was average at 51.8% and 55.5% respectively. About one in five (22.4%) of students surveyed smoke cigarette and 22.3% do not know smoking is a risk factor for many chronic diseases. Less than half (46.4%) purchased a medicine in the last one month and many purchased an antibiotic. Nine out ten of the students are interested in learning more about self-care and 81.8% are interested in taking a general study course (GST) on self-care and self-medication.

Conclusion: The study showed that knowledge of self-care and illness prevention is moderate among University of Lagos students. Their interest to learn more about self-care and self-medication is high.

15/PHM/08

KNOWLEDGE AND USE OF ANALGESICS AMONG UNDERGRADUATES OF UNIVERSITY OF LAGOS

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Background: Analgesics are one of the most seriously abused over-the-counter drugs in Nigeria due to different misconceptions, lack of awareness etc. They are also readily available and accessible.

Aim: The aim of this study was to assess the level of knowledge and describe the use of analgesics among undergraduates of the University of Lagos.

Method: This was a cross-sectional survey of undergraduates of the University of Lagos, Akoka campus, using a pretested questionnaire. The survey instrument comprised twenty-two questions in three sections of demographics, habits and knowledge. A total of 384 valid respondents were obtained across seven different Faculties in the ratios according to the number of students in each Faculty. Data was collated and analysed using SPSS 17. Descriptive analysis, student t-test, chi-square and Fishers exact tests were done as appropriate.

Results: The distribution of respondents across gender was almost even (50.4% males and 49.6% females). There was no statistically significant difference on the use ($\chi^2=2.668, p>0.05$) and knowledge of analgesics ($t=-1.104, p>0.05$) between the male and female respondents. The most used painkiller was paracetamol (71.7%). Only about 23.4% of the respondents read the leaflets before using the drugs. 44.7% of the respondents self-medicated with the analgesics based on the previous experiences they had. There was a statistically significant difference in the knowledge of pain killers across the five class levels ($F=12.717, p<0.05$).
Conclusion: The knowledge of analgesics is very poor among the University of Lagos students and there is a lot of analgesic self-medication practice. There is a need to educate these students on the use of analgesics.

Keywords: Analgesics, Use, University of Lagos Students, Knowledge.

15/PHM/09

TOWARDS THE DISCOVERY OF NOVEL ANTI-MALARIAL AGENTS FROM RENEWABLE UNDER-UTILISED PLANT MATERIALS

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Malaria still remains one of the four most devastating diseases in the world. Others are HIV/AIDS, Cancer and Tuberculosis. Of all four, only malaria can cause death within 30 seconds of the disease onset. Pregnant women and children below 5 years are mostly affected. It therefore constitutes a public health problem in more than 90 countries, inhabited by about 40% of the world’s population. The disease is transmitted through the feeding of blood meal by the female anopheles mosquito from the infected human. *Plasmodium falciparum* is the most common type of the parasites among *P.vivax*, *P malariae* and *P.ovale*. Most countries where this disease is endemic faces significant parasite resistance to frequently used anti-malarial drugs including artemisinin-based combination therapies (ACTs). For these reasons, novel, effective, readily available and affordable antimalarials are badly needed. In this regard, research on traditional medicinal plants for their anti-malarial constituents becomes important to facilitate the utilisation of available botanical resources and to provide potentially active lead anti-malarial compounds, perhaps with new mechanisms of action. In Africa, the use of indigenous plants still plays an important role in the treatment of malaria. However, several African medicinal plants with known ethnobotanical values are under utilised. Therefore, it is the objective of the present study to carry out logical pharmaceutical evaluation of four under utilised medicinal plants namely, *Tectona grandis*, *Minuuseps caffra*, *Syzygium aromaticum* and *Leptospermum petersonii* for their anti-malarial activity. Solvent extraction followed by extensive chromatography of stem bark, leaves, and buds of these plants afforded known phytochemicals: Betulinic acid (BA), Ursolic acid (UA), Oleanolic acid (OA), 6-Methyltectochrysin (6MTC), and 6,8-dimethyltectochrysin (6,8DMTC), respectively. Chemical derivatisation of these known bioactive compounds gave potential anti-malarial agents which are more potent than the existing ones against resistant malaria parasites. Structural elucidation of these compounds was accomplished by spectroscopic techniques- IR, 1D & 2D-NMR as well as EI-MS.

Keywords: Discovery, anti-malarial, under utilised, medicinal plants.
ANTIMALARIAL AND PHYTOCHEMICAL INVESTIGATIONS OF LEAF EXTRACT AND FRACTIONS OF *HEDRANTHERA BARTERI* DURAND & SCHINZ (APOCYNACEAE)

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**Background:** Malaria is still the most destructive and dangerous parasitic infection in tropical and subtropical regions of the world. Due to increasing resistance of *Plasmodium* strains against the widely available antimalarial drugs, the search for new agents has been of great necessity in the battle against malaria. Natural products have played a significant role in the discovery of leads for the development of drugs to treat human diseases. *H. barteri* is a Nigerian plant used as vermifuge, laxative, analgesic and as antimicrobial agent.

**Objective:** This study was aimed at investigating the antiplasmodial activity and phytochemical screening of *H. barteri* leaf extract.

**Method:** The ethanol extract and fractions (hexane, dichloromethane, ethylacetate and aqueous) of the leaves of the plant were assessed for antimalarial activity against chloroquine sensitive *Plasmodium berghei* NK65 infected mice using the 4-day suppressive and curative test procedures. Chloroquine was used as positive control. The crude extract was also screened for the presence of secondary metabolites.

**Result:** The extract at oral doses (100, 200 and 400 mgkg⁻¹) produced significant (*P* < 0.05) dose-dependent activity against the parasite in both studies. The chemosuppressive effect of the extract and fractions (100mgkg⁻¹) ranged between 56.48-85.29% and 14.31-80.85% respectively. The curative effect of the extract ranged between 77.71-82.60% and the activity of the fractions increased in the order, ethylacetate < hexane < dichloromethane < aqueous. In terms of toxicity, no lethality to mice was seen with the extract up to dose of 1000 mgkg⁻¹. Phytochemical investigations indicated the presence of alkaloids, saponins, steroidal nucleus and polyphenolic compounds that have been implicated in antimalarial activities.

**Conclusion:** The present results indicate that leaf extract of *Hedranthera barteri* has promising antiplasmodial activity against *P. berghei* which resides mainly in aqueous fraction. The plant is a potential source of antimalarial agents.

**Keywords:** Antimalarial activity, *Plasmodium berghei*, *Hedranthera barteri*, aqueous fraction.
INTRODUCTION: Nigeria has been reported to be the 4th amongst the 22 Tuberculosis (TB) high-burden countries. The incidence of TB worldwide with children is a critical part of the global tuberculosis pandemic, with an estimated 900,000 cases and 100,000 deaths per year globally. However, not much is known about TB occurring in children worldwide, especially in resource limited countries due to under reporting.

OBJECTIVES: The objectives of this study were to determine the treatment and initial outcomes of tuberculosis treatment in children attended to at Lagos University Teaching Hospital.

METHOD: This was a retrospective study using the available case files of all twenty-five children treated for TB patients within January, 2006 - December, 2010. The data obtained were analysed using SPSS statistical package version 17.0.

RESULTS: Most (76.0%) of the children were male, not in school (72.0%) with mean age of 7.5±4.3. More than half (68.0%) were the first or second borne child of their parents. Most (80.0%) had no history of previous exposure to TB. There was no co-infection with HIV for the 22(88%) of the children tested. TB diagnosis was done with Acid Fast Bacilli tests (80.0%), chest X-rays (52.0%) and Mantoux skin test (24.0%). Recorded initial management of the patients involved use of TB drugs (48.0%), blood transfusion (36.0%) and Furosemide (28.0%). Treatment outcomes recorded 68.0% of defaulters with only 6 (24.0%) of the patients cured. One (4.0%) treatment failure and death were recorded respectively within the period.

CONCLUSION: There is need for interventions to involve the caregivers, improve treatment outcomes and reduce or prevent defaults to treatment.

KEYWORDS: Tuberculosis, Children and LUTH
Several microbes from various origins are the cause of many diseases to human, animals and plants. Most worrisome is their rapid degree of resistance to medicinal agents resulting in epidemic cases and sometimes death. The burden has been on researchers to discover potent medicinal agents to checkmate their activity.

Plants have been nature’s source of medicinal agents for ages. Recently there has been a revival of interest in herbal medications due to the perception that there is a lower incidence of adverse reactions from plant preparations compared to synthetic pharmaceuticals. *Tectona grandis* is one of such plants. Our previous exhaustive chromatographic investigation on the methanolic extract reveals mainly the presence of betulinic acid, a pentacyclic triterpene having multiple bioactivities against malaria, cancer, HIV, tuberculosis, fungi and bacteria among others.

Currently, we have been able to semi-synthesize four antimicrobial agents (two are novel) from *Tectona grandis* of the pentacyclic triterpene (betulinic acid) origin. These compounds were tested against thirteen bacteria strains namely *Pseudomonas aeruginosa*, *Klebsiella pneumoniae*, *Serratia marcescens*, *Streptococcus faecalis*, *Bacillus cereus*, *Bacillus coagulans*, *Citrobacter freundii*, *Staphylococcus aureus*, *Enterobacter aerogenes*, *Enterobacter cloacae*, *Bacillus polymixa*, *Micrococcus luteus*, *Escherichia coli*; three yeast cultures, *Candida albican*, *Candida utilis* and *Saccharomyces cerevisiae* and four moulds *Aspergillus flavus*, *Aspergillus niger*, *Fusarium oxysporum*, *Penicillium* sp with ciprofloxacin and amphotericin as positive control respectively. The antimicrobial activity (antibacterial and antifungal) and the minimum inhibitory concentration of the compounds were carried out using the agar disc diffusion method (Cos et al., 2006). The MIC value for the antimicrobial agents were highly significant compared to the control in both cases (62ug/ml-125ug/ml against 2mg/ml of control).

Structural elucidation of the compounds were carried out using Fourrier Transformed Infra-Red, Electron Ionisation Mass Spectrometry, 1-Dimentional & 2-Dimentional Nuclear Magnetic Resonance spectroscopy respectfully.

*Keywords*: Betulinic acid, Betulinic acid acetate, Antimicrobial, Triterpene conjugates
EVALUATION OF THE ANTIHYPERLIPIDEMIC ACTIVITY OF NIGERIAN WALNUT EXTRACT – *PLUKENETIA CONOPHORUM MÜLL.ARG. (EUPHORBIACEAE)*

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**Introduction**  
Hyperlipidemia is a condition of abnormally high lipids levels in the blood which has been ranked as one of the greatest risk factors contributing to prevalence and severity of coronary heart disease. The available antihyperlipidemic drugs have some undesirable side effects, however, herbal management of hyperlipidemia are relatively safe, cheap and readily available.

**Objective:** This study was aimed at evaluating the antihyperlipidemic effect of the aqueous extract of the fresh nut of *Plukenetia conophorum* (Mull.Arg) in rat models.

**Methods:** Hypercholesterolemia was induced in rats, by the oral administration of a high fat diet for a period of 21 days; which gave a statistically significant increase (P<0.05) in their plasma total cholesterol (TC) and triglycerides (TG) levels of the rats after the induction. Subsequently, 250 mg/ Kg and 500 mg/Kg of cooked and raw *P. conophorum* aqueous extracts and the standard drug, atorvastatin 10mg/kg were administered for a period of 7 days.

**Results:** After the administration of *P. conophorum* cooked and raw extracts at 250 mg/ Kg and 500 mg/Kg, there was a significantly decrease (P<0.001) in the plasma levels of TC and TG.

**Conclusion:** In conclusion, this result demonstrated that cooked and raw Nigerian walnut – *P. conophorum* had comparable lipid lowering effect with atorvastatin and may be used in the prevention of coronary heart disease and atherosclerosis associated with hyperlipidemia.

**Keywords:** Nigerian walnut – *Plukenetia conophorum*, antihyperlipidemic, Atorvastatin

**ANTI-CONVULSANT ACTIVITY OF THE ETHANOLIC LEAF EXTRACT OF HELIOTROPIUM INDICUM LINN**

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**Introduction:** *Heliotropium indicum* Linn (Boraginaceae) is a coarse foetid herb, up to 2 feet high, used traditionally in treating conditions such as abdominal pains, hypertension, convulsion and dizziness.
Methods: The anti-convulsant activity of the ethanolic extract of the leaves of *H. indicum* (50, 100 and 200 mg/kg p.o) was investigated using strychnine (2.0 mg/kg i.p) and picrotoxin (5.0 mg/kg i.p) induced convulsion models in mice. Acute toxicity was also carried out.

Results: In the picrotoxin-induced seizure, *H. indicum* significantly (p<0.01) prolonged the seizure onset and reduced seizure duration in a dose dependent manner while in the strychnine-induced model, the extract similarly prolonged seizure onset and reduced seizure duration from 50mg/kg to 100mg/kg but showed decreased activity at 200mg/kg. However, none of the animals were protected against mortality in both models. No toxic effect was observed in the extract at 5.0g/kg, suggesting that the extract may be relatively safe at the administered dose.

Conclusion: These results showed that the ethanolic extract of the leaves of *Heliotropium indicum* demonstrated potential anti-convulsant activity and authenticates its use in treatment of convulsion in traditional medicine.

Keywords: *Heliotropium indicum*, convulsion, seizure, picrotoxin and strychnine

15/PHM/15

**SALMONELLA AND ENTERIC FEVERS: POSSIBILITY OF CONTROL OF INFECTIONS BY USE OF LACTOBACILLUS FROM AFRICAN FERMENTED FOODS**

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Background: Enteric fevers are caused by a group of bacteria known as *Salmonella*. It manifest as Salmonellosis; which encompasses a wide spectrum of diseases in humans and animals, the symptoms include acute gastro-enteritis, bacteremia, enteritis and extra-intestinal localised infections involving many other organs. High mortality rates have been recorded where unattended to. The use of *Lactobacillus* as Probiotic in food will likely eliminate this endemic problem.

Methodology: Stool, Rectal Swab and Vomit samples were plated directly on DCA and on Selenite-F. 10ml of blood sample was added to 40ml of Oxoid blood culture. They were incubated at 37ºc for 24 hrs. The blood culture was further cultured on DCA and incubated. Suspected colonies were tested for biochemical reactions using Kligler-iron-Agar (KIA), Motility Indole Urea (MIU) and other sugars. *Lactobacillus* was isolated on MRSA medium. *Lactobacillus* inhibitory assay was carried out using theAgar well diffusion assay.

Result: The recovery of *Salmonella typhi*, *S.paratyphi* and *S. enteritides* was significant (P < 0.05) from Blood culture compared to stool and vomit samples while *Spullorum* was insignificant (P> 0.05). Enteritis (46.15%) was the most occurring symptom for the disease except *S. pullorum*. Salmonellae were sensitive (70-100)% to Ciprotab (Quinolone) followed by the 3rd generation Cephalosporines; ceftaxidime, Ceftriaxone and Cefuroxime. They were resistant to Chloramphenicol, Gentamycin, Ampicillin and Tetracycline. Ap* Cot* Gen* Chl*
TeT Amx Chl TeT were common antibiotic resistance Phenotypes. *Lactobacillus lactis, L.plantarum* and *L. debruecki* inhibited the *Salmonella*sp. Plasmid bands (26 – 56) Kb were isolated

**Conclusion:** Laboratory investigation for Salmonellae should be done on blood and stool samples. The High resistance to commonly used antibiotics was addressed by susceptibility of strains to *Lactobacillus*. This calls for further study on *Lactobacillus* as probiotic for the control of Salmonellosis.

**Keyword:** Salmonella, Enteric Fevers, *Lactobacillus*, Fermented Foods

15/PHM/16

**COMPARISON OF ADSORPTION CAPACITIES OF ACETAMINOPHEN UNTO VARYING DOSAGE FORMS OF ACTIVATED CHARCOAL AVAILABLE IN LAGOS NIGERIA VIA IN VITRO ADSORPTION STUDIES AND SCANNING ELECTRON MICROSCOPY**

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Activated charcoal has been widely used as an adsorbent in cases of drug intoxication. In this study varying dosage forms of activated charcoal obatined from community pharmacy outlets were investigated for their adsorption capacity when challenged with acetaminophen intoxication in an *in vivo* model utilising simulated gastric fluid (pH 1.2) and simulated intestinal fluid (pH 6.5).

Equilibrum kinetics of acetaminophen adsorption onto activated charcoal surface was determined via batch studies at different adsobent : adsorbate ratios. The isotherm adsorption experiment was carried out at 37°C and langmuir isotherm models were utilised to describe the equilibrium kinetics data, after UV spectrophotometry determined residual acetaminophen concentration. Characterisation of adsoprtion site adsorption porosity was done via scanning electron microscopy.

A preponderance of microporosity was observed with the powder activated charcoal adsorption occuring on the micropore surface, the adsorption was a good fit to the langmuir isotherm (Figure 1), maximal adsorption capacity of 231.37mg/g of activated charcoal [214.04: 242.91] at a 95% CI, which allowed for maximal adsorption capacity (MAC) of acetaminophen at pH 1.2. A preponderance of mixed pore structures which were not clearly established was observed with both the tablets and capsules having MAC of 206.63mg/g of activated charcoal [199.98 : 212.38] and 109.38mg/g of activated charcoal [105.21 : 114.25] respectively pH 1.2. MAC data at pH 6.5 showed very little variation from that obtained at pH 1.2 (p < 0.05 95%CI). The presence of excipients in the tablets and capsules caused a retardation in adsorption via intraparticle diffusion especially at the basal micropore sites on the activated charcoal surface reflected by their MAC and SEM micrographs (Figure 2).

The dosage forms were evaluated as activated charcoal powder < activated charcal tablets < activated charcoal capsules when suitability of administration for poisioning due to the availability of sites for adsorption and MAC where assessed.
Figure 1 Langmuir adsorption isotherm of paracetamol using activated charcoal powder in simulated gastric fluid.

Figure 2 Scanning electron micrograph of particulate surface of activated charcoal from (A) activated charcoal capsule; (B) activated charcoal tablet and (C) activated charcoal powder after adsorption of acetaminophen in simulated gastric fluid pH 1.2

**Keywords:** Acetaminophen, Adsorption, Isotherms, Activated charcoal, Scanning electron microscopy.

15/PHM/17

**TRANSLATIONAL RESEARCH FROM GOWN TO TOWN: INTEGRATED MEDICINE CLINIC IN LAGOS STATE**

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There is a dearth of access to primary health care. And where available, may not be affordable. Our research team won a grant from the Lagos State Research and Development Council in 2014. The project is already ongoing as a Model Herbal Clinic for the Department of Pharmacognosy in collaboration with the Traditional Medicine Board of Lagos State with the aim of teaching, research and direct community assistance purposes where herbal medicines with proven efficacy through thorough, verifiable and reproducible research as a contributor to the primary health care of the people.

The project has translated into gains with the acquired ovens, lamina flow hood, grinding machines and automated tea bag packing machine that automatically complete such
functions as bag-making, filling, measuring, sealing, thread feeding, labeling, cutting and counting, thus reducing labour expenses and improving production efficiency and sterility.

Thus, the Faculty can boast of a well-equipped herbal processing Laboratory set to provide researchers and students with specialised skills on the formulation of herbal teas. It is the first to be recorded in any University across the nation. It will assist in the practical training of Pharmacy students and teachers on formulation of real-life solutions proffered by herbal medicines in disease management and eradication to be applied to public health systems. The team in collaboration with the Lagos State Traditional Medicine Board team is set to takeoff with the Integrated Medicine Clinic at Onikan.

15/SCI/01

USE OF PHYSIOLOGICAL BASED EXTRACTION TEST (PBET) FOR THE ASSESSMENT OF METALS BIOACCESSIBILITY IN VEGETABLES GROWN IN CONTAMINATED SOILS

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An important concern for human health is the uptake of toxic metals by vegetables from soils and their consumption by humans. The present study was carried out to estimate the oral bioaccessibility of metals in vegetables (spinach, pumpkin, celosia, okro leaves and waterleaf) grown on contaminated soils collected from five different sites in Lagos, Nigeria. The soil and vegetables were digested and the total metal concentrations (Cu, Cd, Cr, Pb and Zn) determined using flame atomic absorption spectrophotometer. Bioaccessibility study of the edible parts of the vegetables was carried using modified in vitro physiologically based extraction test (PBET). The results obtained showed that individual plant types differ in their level of metal uptake. The levels were in range of 0.5-13.5 mg/kg for Cd, 2.0-221 mg/kg for Cu, 2.5-37.7 mg/kg for Cr, 10-250 mg/kg while Pb was non-detectable. The transfer factor from soil to vegetable (TF) followed the order Cd >Zn > Cu > Cr >Pb. For the PBET study, the metals were solubilised mostly in the gastric phase, the results varied in the range of 0.42-114.4mg/kg for Cu, 0.12-2.38mg/kg for Cd, < 2.36mg/kg for Cr and 0.83-137mg/kg for Zn, however, there was little or no bioaccessibility in the intestinal phase. Though, the levels of metals absorbed in the gastric phase were found to be low in most of the vegetables studied, this result revealed that that metals can be retained in the human gut when taken in through consumption of contaminated vegetables.

Keywords: Heavy metals, Soils, Vegetables, Bioaccessibility, Bioavailability, PBET
INFORMATIVE G-PRIOR IN BAYESIAN MODEL AVERAGING WITH BAYESIAN MODEL SAMPLING

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Bayesian methods provide more intuitive and meaningful inferences than likelihood-only based inferences. This is simply because of the fact that the Bayesian approach includes prior information as well as likelihood. Posterior model probabilities in the context of model uncertainty are typically sensitive to the specification of a prior. Informative prior structures related to a natural conjugate prior specification are investigated under a limited choice of a single scalar hyper parameter (g-prior) which corresponds to the degree of prior uncertainty on regression coefficients. The consequences of different choices of g-prior are examined. In addition to posterior criteria used, this research also compares the predictive performances of different g-priors. This research introduces a new g prior structure and demonstrates the sensitivity of posterior results to the choice of the new g-prior using data set comprises of 127 observations (countries) and 40 variables (economic indicators variables). This research focuses on a situation where we need to deal with a large model space (i.e. over 500 billion models!) made up of large set of regressors generated by a small number of observations. Specifically, a normal linear regression model with uncertainty in the choice of regressors was employed. Markov Chain Monte Carlo (MCMC) Birth-death sampler are adopted to generate a process which moves through model space to adequately identify the high posterior probability models using the “Markov Chain Monte Carlo Model Composition”, method applicable under Bayesian Model Sampling (BMS). The main finding of the research reveals that the proposed g-prior specification exhibited equal reliable predictive performance with identified g-prior structures in the work of Fernandez et al. (2001) and Eicher et al. (2007).

Keywords: Bayesian Model Averaging; Bayesian Model Sampling; Informative g-Priors; Posterior Model Probability; Predictive Performance.

ADOPTING RDBMS QUERY FOR AUTHENTICATING ACCESS TO PATIENT INFORMATION

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The security of medical record is no doubt an issue of concern based on its importance. Electronic personal health records enable patients to access, manage, and share certain of their own health information. These capabilities establish the need for precise access-control mechanisms that restrict the sharing of data to those authorised personnel. This work explores the adoption of a relational database query for authentication as an access-control mechanism for restricting access to patient records. The project implemented the mechanism
entirely in a relational database system using ANSI-standard SQL statements. Based on a set of access-control rules encoded as relational table rows, the mechanism determines via a single SQL query whether a user who accesses patient data from a specific application is authorised to perform a requested operation on a specified data object using Microsoft Visual Studio 2010 – VB as the front-end. Testing of this query on a moderately large database has demonstrated execution times consistently below 100 milliseconds and only users who are authorised to perform specific operation are permitted by the system.

15/SCI/04

A MOBILE-BASED EXPERT SYSTEM FOR THE DIAGNOSIS OF EBOLA VIRUS

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The development of expert system for the diagnosis of Ebola Virus (ES-DEV) is important to both medical industry and Ebola Virus patients. Medicine is one of the areas that has benefited from the use of artificial intelligence since the advent of machine intelligence. Different expert systems for diagnoses have been developed; however, they are either standalone or Web-based systems. This limitation puts a vast majority of Africans in general and Nigerians in particular at a disadvantage. Recent advances in the capabilities of mobile phones and increased usage, however, have opened up new opportunities for innovative and complex applications that can be accessed via mobile phones. This work presents Ebola Virus diagnosis system that can be accessed via mobile phones to cater for the needs of the vast majority of users in places where healthcare is inadequate. The application (ES-DEV) which uses waterfall methodology was develop on Android mobile phone with Java Runtime Environment. ES-DEV is currently working and further recommendation is currently being made to adopt its application in medical institution.

15/SCI/05

MODELLING CUSTOMER RELATIONSHIPS AS HIDDEN MARKOV CHAINS

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Models in behavioral relationship marketing suggest that relations between the customer and the company change over time as a result of continuous encounter. A number of theoretical models have been put forward concerning relationship marketing, both from the standpoints of consumer behavior and empirical modelling. In addition to these, this study proposes the hidden Markov model (HMM) as a potential tool for assessing customer relationships. Specifically, the HMM is proposed via the framework of a Markov chain model to classify customers relationship dynamics of a telecommunication service company by using a practical data set. Basically, we develop and estimate a HMM to relate the
unobservable relationship states to the observed buying behavior of the customers giving an appropriate classification of the customers into the relationship states. By simply accounting for the observed and unobserved heterogeneity with a two state hidden Markov model and taking estimation into account via an optimal estimation method, the empirical results not only demonstrates the value of the proposed model in assessing the dynamics of customer relationship over time but also gives the optimal marketing-mixed strategies in different customer state.

**Keywords**: Markov chain, customer’s relationship, transition probability, estimation, modelling

15/SCI/06

**COMPUTATIONAL STUDIES ON TAUTOMERISM IN (E)-4-R-2-((pyridin-2-ylimino) methyl) phenol: EFFECT OF SOLVENT POLARITY**

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The Schiff base (E)-4-R-2-((pyridin-2-ylimino) methyl) phenol, 1 derived from 4-substituted salicylaldehyde and 2-aminopyridine and its tautomer, (Z)-4-R-6-((pyridin-2-ylamino) methylene) cyclohexa-2,4-dione, 2 was studied using the density functional B3PW91 and 6-311(d,p) basis set; R=H, Br, NO$_2$, OCH$_3$. The polarizable continuum model was used to study the effects of solvation on these compounds at the same level. Vibrational analysis, TD-DFT spectra and frontier molecular orbital analysis were computed on the optimised geometry. 1 was observed to be generally more stable than 2 in line with common observation. The higher dipole moment of 2 may however make it more stable than 1 with increase in solvent polarity. The electron donating power of the R group was also observed to reduce the energy difference between 1 and 2.

**Keywords**: Schiff base, density functional theory (DFT), salicylaldehyde, aminopyridine, hydrogen-hydrogen interaction, keto-enol tautomerism

15/SCI/07

**REACTION OF 1-CHLORODINITROBENZENE WITH ANILINE IN ACETONITRILE: A DFT STUDY**

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We report the computational studies on the reactions of 6-R-1-chloro-2, 4-dinitrobenzene, 1 and 4-R-1-chloro-2,6-dinitrobenzene, 2, with aniline in acetonitrile at the B3PW91/6-31g(d,p) level of theory, (a: R = H, b: R = NO$_2$, c: R = CF$_3$, d: R = CN and e: R = ringN). The integral equation formalism polarizable continuum model (IEFPCM) was used to model the solvent environment. Calculations show that the reactions went through the MC intermediate with the exception of 1a, 1e, 2a and 2c. In general, the attack of the substrate by
the nucleophile was calculated to the rate determining. When it was obtained, the
decomposition of the MC to the products seemed effortless

*Keywords:* SnAr, Acetonitrile, DFT-IEPCM

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15/SCI/08

**HOW STUDENTS INTAKE IMPACTS QUALITY OF EDUCATION:**
**APPLYING METAHEURISTIC ALGORITHM TO THE ADMISSION PROBLEM AS A COMBINATORIAL OPTIMISATION PROBLEM**

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Prominent among the factors militating against quality education is poor student’s intake
standards. This in the long run has multiplier effect on the quality of a nation's human
capital. The role of human capital in national transformation cannot be overemphasised. However, the process of developing human resource for socio-economic transformation, particularly in an optimal sense, means conscious and concerted efforts must be geared
towards meritocracy. Secondary education is reputed for bridging the gap between primary
education and tertiary education. It particularly provides the gateway for career
development as subjects taken at the senior level are tailored towards future career choices.
And to ensure that resources invested in education are well utilised, students admission
process has to be streamlined to secure best candidates specifically in gifted schools where
competition is high. In this work, we formulated a computational strategy to upgrade
admission process by reducing cost and time associated with it. Using a Nigerian University
Secondary School as case study, the researchers applied a metaheuristic search algorithm to
the admission problem of securing the best candidates from a pool of applicants. In the first
instance, we visualised the problem as a combinatorial optimisation problem. Then, we
reviewed literature, gathered requirements and designed the proposed system using finite
automata and Unified Modelling Language (UML) and finally, the modelled system was
tested statically. The outcome of the study corroborated the claims that metaheuristic
algorithms are capable of optimising an admission process in terms of cost and speed.

*Keywords:* Admission process, Algorithm, Combinatorial optimization problem, Metaheuristics Quality education
RESOLVING THE RECRUITMENT AND SELECTION PROBLEM AS NP-HARD PROBLEM

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As organisations increasingly strive to attract and retain high calibre ICT-compliant staff, recruitment and selection is attracting huge attention. This paper classified the recruitment and selection problem as NP-hard problem and applied metaheuristic algorithm to solve it. This is against the background that human resources are germane to the socio-economic transformation of nations. And at the micro level, the role of human resource strategy in achieving set organisational goals and objectives in the most efficient and effective fashion cannot be overemphasised. The University as a human-oriented organisation needs a robust resource planning strategy - in this context, an efficient and effective recruitment and selection process to meet its human resource target. This study focused on University of Lagos as case study and applied computational theory in the form of metaheuristic algorithm in a bid to improve on the existing process. We reviewed literature, gathered requirements, designed a system and statically tested the process-correctness of the proposed system. The outcome is a software architecture that is promising in terms of aiding the search for optimal solutions (best candidates) from any pool of job applicants in a timely and cost-effective fashion. This will help university administrators in the uphill task of identifying best-fits and by extension help align the university’s human resource strategy with its corporate strategy and objectives. It is hoped that the outcome of this work would transform the way recruitment and selection problem is tackled.

Keywords: Algorithm, Metaheuristics, NP-Hard problem, Optimisation, Recruitment and selection

MICOREMEDIATION OF CRUDE OIL POLLUTED SOIL USING FOUR ISOLATES OF MICROORGANISMS

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The need to evaluate the efficiency of using microorganisms to clean up soil polluted with crude oil led to the study of the potentials microbes for remediation crude oil polluted soils. This study was carried out to evaluate the potentials of Bacillus subtilis, Micrococcus luteus, Penicillium niger and Candida sp to accelerate the remediation of soil polluted with crude oil. This was done for each microbe and as consortia of microbes after four weeks of incubation. The levels and the types of the petroleum hydrocarbon present in the soils samples at the beginning and after four weeks were determined using the gas chromatographic technique. The results obtained showed that the hydrocarbons were more
Reduced in soils inoculated with the microbes than in soils without any microbe. The highest reduction of the petroleum hydrocarbons were noticed in soils inoculated with B. subtilis alone followed by the soil inoculated with a consortium of the four microbes. Soil inoculated with Candida sp alone had the lowest reduction of petroleum hydrocarbon. The other soil parameters (soil pH, soil temperature and soil nutrient levels) measured were also affected by the growth of the microbes. There were statistical differences among the parameters tested in the different soil treatments (P<0.05; P< 0.01; P< 0.001). From the results obtained, it is suggested to use B. subtilis as single culture for cleaning up areas contaminated with crude oil and when the microbes are to be applied as a consortium, it will be better to combine the four microbes.

Keywords: Consortium, remediation, crude oil, pollution

15/SCI/11

COMPARATIVE STUDY ON THE PROXIMATE NUTRITIONAL PROPERTIES OF FLOUR VARIETIES IN LAGOS NIGERIA

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This study aims at comparing the nutritional properties of the fine flours of yam, maize, cowpea beans, soy beans and rice available in the Nigeria local market as a step to reducing overdependence on wheat flour which is largely an import product in Nigeria. pH, acidity and proximate analyses (nutrient analyses) were carried out on five different flour types sampled from markets in Lagos, Nigeria. The pH, percentage titrateable acid had a range of 3.26 (maize flour) to 5.87 (wheat flour) and a range of 0.001 (wheat flour) to 0.007 (rice flour) respectively. Fat, Fiber, Protein and Carbohydrate gave ranges between 14.90 (Soy) to 1.98 (wheat), 0.25 (Soy) to 5.20 (wheat), 7.71 (rice) to 42.17 (Soy beans), and 28.59 (Soy beans) to 79.57 (rice) respectively. A paired t-test to compare the similarity of wheat flour to other flours revealed that the wheat flour was not statistically different from all the other flour samples (yam, maize, beans, rice flours). Hence the yam, maize, beans, rice and soy beans flours may be used interchangeably with wheat flour. However further tests such as organoleptic test to compare the similarity of these flours in pastries may be required the validate suitability of these flours in pastries.

Keywords: Flour, Titrateable acidity, protein, fats, crude fiber
MORPHOLOGY AND DEGRADABILITY OF SiO$_2$-Na$_2$O-CaO-P$_2$O$_5$ GLASS PREPARED BY A MODIFIED SOL-GEL METHOD

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Synthetic silicate bioactive glasses are at the fore in repair of damaged bones because of the advantage of bonding to surrounding bones without eliciting adverse immunological response. However, most of the bulk glasses obtained through conventional fabrication methods lack the combined attributes of bioactivity and degradability when applied in vivo. The work herein aimed to prepare a bioactive glass scaffold having good bioactivity and controlled degradation. Na$_2$SiO$_3$ was extracted from bentonite clay and used to prepare the glass in a modified sol-gel method. Evaluation of apatite forming and degradation ability was carried out in vitro in simulated body fluid (SBF). Characterization was performed using scanning electron microscopy (SEM), energy dispersive X-ray (EDX) analysis and X-ray diffraction (XRD) before and after immersion of samples in SBF. Results obtained shows the glass to be very bioactive having controlled rate of degradation in body fluid.

Keywords: Bioactivity, Degradation, Bentonite clay, Simulated body fluid; hydroxyapatite

AN OVERVIEW OF RESOURCE MANAGEMENT CHALLENGES IN CLOUD COMPUTING

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ABSTRACT

Cloud Computing is a model for enabling ubiquitous and on-demand access to shared resource pool. It represents a paradigm shift from traditional personal computing to computing as a pay-per-use utility. Cloud computing is not without its challenges and despite tremendous progress in recent years, issues relating to security, resource provisioning and high availability etc. still continue to plague it. This write up presents some of these challenges and reviews the works of numerous authors who have proposed various solutions to these challenges.

Keywords: Cloud computing, Virtualisation, Resource management, Load balancing.
EXCITED TRIPLET STATE ENERGY OF PHTHALOCYANINES: INVESTIGATION OF THE EFFECT OF CENTRAL METAL

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The investigation of the effects of presence of central metal on the excited triplet state energy of octakis (pentylthio)-derivatised phthalocyanines (H₂Pc, H₂Pc, PdPc and PdPc) is presented. Though, all the molecules show high triplet quantum yield, the lack of correlation between triplet quantum yield and singlet oxygen quantum yield for the metal-free phthalocyanines (Pcs) is found to be a result of low triplet state energy of the phthalocyanines (< 94.00 KJ/mol). The palladated Pcs show high triplet state energy (> 94.00 KJ/mol) resulting in high singlet oxygen quantum yield.

Keywords: Triplet State, Singlet State, Energy, Phthalocyanines, Central Metal.

HYDROCARBON UTILISATION POTENTIALS OF INDIGENOUS WOOD-DIGESTING BACTERIA ISOLATED FROM THE LAGOS LAGOON

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One of the major environmental problems today is hydrocarbon contamination resulting from the activities related to the petrochemical industry. Accidental releases of petroleum products are of particular concern in the environment. The degradation of petroleum hydrocarbons in Bonny light crude oil was studied for a period of twenty-one days using wood-digesting microbial strains isolated from the Lagos lagoon as the inoculum. The study investigated the ability of the wood-digesting bacterial strains to degrade petroleum and their potential to produce biosurfactant which could be used for possible environmental applications. Gas chromatographic analysis revealed the rate of degradation of hydrocarbon by Bacillus megaterium, Streptomyces pseudogriseolus and Paenibacillus sp with degradation rates of 89.34, 86.33 and 79.37 % respectively. Although, the bacterial isolates utilised hydrocarbons, they could not produce any biosurfactant. Results from this study suggest that such wood-digesting bacterial strains from Lagos lagoon could be useful in bioremediation of oil spill in the polluted environment and would lead to reduction in health hazard and improve socio-economic values.

Keywords: Biodegradation; Hydrocarbons; Wood-digesting, Bacteria, Crude Oil;
The growth pattern, size composition, fecundity studies and food and feeding habits of Royal spiny lobsters (*Panulirus regius*) were carried out off the Nigerian coastal between the month of May and October, 2014. A total of 120 specimens of *P. regius* ranging from 13.2 - 28.5 cm in total length were collected during this study period. The total length of the samples in May ranged from 16.0-21.0 cm with the highest frequency from the class interval 18.5-19.4. In the month of June, the total length of the samples ranged from 13.2-17.5 cm with the highest frequency from the class interval of 14.5-15.4. The total length of the samples for the month of July ranged from 13.6-17.7 cm and the highest frequency was from the class interval of 14.5-15.4 and 15.5-16.4 (both having the same frequency). In August, the total length ranged from 13.8-28.5 cm with the highest frequency from the class interval of 15.5-16.4. In September, the total length ranged from 13.7-27.0 cm with the class interval ranging from 15.5-16.4 had the highest frequency. While in October, the total length ranged from 14.6-27.0 cm with the highest frequency to be in the class interval of 15.5-16.4. A cumulative of all the months (May-October) was also determined with the total length ranging from 13.2-28.5 cm and the highest frequency in the class interval of 15.5-16.4. The length-weight relationship shows the b value was 2.8732, 3.1394 and 2.9635 for males, females and combined sexes respectively. The b value for females was higher than that of the males. The correlation coefficients (r) for male, female and combined sexes were 0.8586, 0.9607 and 0.9232 respectively. This study showed that the weight of *P. regius* increased proportionately to an increase in length. From the 120 samples, 35(29.2%) had empty stomachs while the remaining 85 (70.8%) stomachs had food contents that were either digested or masticated. Fish parts, worm parts, sea urchin parts, crab parts and lobster parts were found in the stomachs containing food. There were 53 males and 67 females making the sex ratio 1:1.26 with a chi square ($\chi^2$) of 1.64. This cumulates to the fact that there is no significant difference in the sex-ratio. Of the 67 females recorded in this study, only 17 (25.4%) had eggs deposited at the underside of the abdomen. The ratio of egg bearing females to females without eggs was 1:0.25. The fecundity was estimated in relation to the total length showing a very low negative correlation. This study showed that *P. regius* were highly fecund with a minimum of 109,375 eggs in female with 7.9cm total length and a maximum of 494,645 eggs in female with 9.9cm carapace length. Barnacles were also found in the collections of *P. regius* during this study period with attachment to the abdomen and antenna but with preference of attachment to the antenna.

**Keywords:** Growth pattern, Fecundity, Feeding habits, Spiny lobster and Nigerian coast
PETROGRAPHIC AND GEOCHEMICAL ANALYSIS OF TAR SAND OCCURRENCE IN SOME PARTS OF SOUTHWESTERN NIGERIA

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6 surface and 6 subsurface Tar Sand locations from the Dahomey basin (latitude N06° 49' 49" to N06° 39' 43" and longitude E003° 58' 91" to E004° 35' 40" being some parts of Ogun and Ondo states of Nigeria) were sampled and investigated using granulometric, major element geochemistry and petrographic analysis. Granulometric analysis showed that grain size with an average of 1.002 suggesting medium sand for the surface sampled location while for the subsurface sampled location, has an average of 1.308 implying medium sand. Standard deviation for the surface sampled location has an average of 0.649 (well sorted) while the subsurface sampled location has an average of 1.6406 (Poorly sorted). The sediments are coarsely and symmetrically skewed for the surface and subsurface sampled locations respectively. From linear discriminate function analysis, the sediments are of fluvial origin. Bivariate plot, suggests fluvial deposited sediments deposited by fairly consistent and relatively high energy for the surface sampled location and an inconsistent and relatively high energy for the subsurface sampled locations. Geochemical analysis suggested Iron sands and Ferromagnesian Potassic sands for both surface and subsurface sampled locations. Using SiO$_2$, Na$_2$O+K$_2$O and Al$_2$O$_3$ to represent quartz, feldspar and rock fragments respectively, in a ternary diagram suggested quartz arenites for both surface and subsurface sampled locations. Values of the chemical index of alteration (CIA) and chemical index of weathering (CIW) showed that both the surface and subsurface samples have been exposed to intensive weathering. The sediments where deposited in a passive margin. Dominant mineralogy of quartz and iron were observed from petrographic analysis.

Keywords: Tar-Sand, Granulometric, Geochemical, Petrographic

SIZE COMPOSITION, DISTRIBUTION AND GROWTH PATTERN OF TWO CARIDEAN SPECIES FROM THREE INTERCONNECTING LAGOONS, SOUTH-WEST, NIGERIA

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The size composition, distribution and growth pattern of *Macrobrachium macrobrachion* (HerkLOTS, 1851) and *Macrobrachium vollenhovenii* (HerkLOTS, 1857) from Badagry, Lagos and Epe Lagoons were investigated over 24 months. The major ecological difference in the lagoons was salinity. The size of *Macrobrachium macrobrachion* and *Macrobrachium vollenhovenii* ranged from 4.8 – 11.8cm, 5.4 – 15.9cm and 4.9 – 11.9cm and from 4.5 – 16.6cm, 5.1 -12.8cm and 4.3 – 22.6cm for Badagry, Lagos and Epe Lagoons respectively. The largest sized prawns of *Macrobrachium macrobrachion* and *Macrobrachium vollenhovenii* were obtained
from Epe Lagoon (freshwater environment). *Macrobrachium macrobrachion* had the highest occurrence from the three lagoons, occurring more in both Badagry and Lagos Lagoons while *Macrobrachium vollenhovenii* occurred more in Epe Lagoon. The prawns exhibited an allometric growth. The b (regression coefficient) values of *Macrobrachium macrobrachion* ranged from 2.7575 – 3.2370 while that of *Macrobrachium vollenhovenii* ranged from 2.8058 - 3.6759 for the three lagoons. There was a strong positive correlation between total length and weight for both species. The coefficient of determination ($r^2$) values for *Macrobrachium macrobrachion* ranged from 0.7867 – 0.9377 and 0.8672 - 0.9807 for *Macrobrachium vollenhovenii*. The implication of the estimated length-weight relationship (LWR) parameters of *Macrobrachium* species from the three Lagoons confirmed increase in length being proportional to increase in weight. The variable environmental factors in the three interconnecting lagoons had no influence on the size composition, distribution and growth of the species, thus making the lagoons suitable for existence of the species.

**Keywords:** *Macrobrachium macrobrachion*, *Macrobrachium vollenhovenii*, allometric growth, salinity, length-weight, relationship.

15/SCI/19

**LIQUID CHROMATOGRAPHIC METHOD FOR THE SIMULTANEOUS DETERMINATION OF SULPHAMETHOXAZOLE AND TRIMETHOPRIM IN PHARMACEUTICAL FORMULATIONS**

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This paper describes the development and validation of a simple, specific, precise and accurate Liquid Chromatographic method for the simultaneous determination of sulphamethoxazole and trimethoprim in pharmaceutical dosage forms. The chromatographic resolution was achieved with 50mM sodium phosphate buffer and acetonitrile (17:3) on a reversed phase column - Octyldecysilane C18 column (100 x 4.6 mm, i.d., 5µm) - at ambient temperature. The flow rate through the column was 1ml/min and the UV detection was at 260nm. Mean retention times for trimethoprim and sulphamethoxazole were 2.998 and 6.205 minutes respectively. Calibration curves were rectilinear over the ranges 5-80 mg/L (trimethoprim) and 25-400 mg/L (sulphamethoxazole). The RSD was less than 1.75% and percentage recovery was between 91.93% - 103.98% with respect to precision and accuracy. The method has been used to analyse branded co-trimoxazole tablets. The percentage content of sulphamethoxazole and trimethoprim were found to be comparable with BP 2002 requirement. This method, which has a fair run time of 6 minutes, is cost effective for routine analytical work and for quality assurance and quality control/product monitoring.

**Keywords:** Sulphamethoxazole and trimethoprim, Determination, Liquid Chromatographic method.
RESIDUAL DISTRIBUTION AND RISK ASSESSMENT OF PCB CONGENER PROFILES IN ENVIRONMENTAL SAMPLES FROM IJORA POWER STATION

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There is considerable public concern regarding the potential risks to health from exposure to Polychlorinated biphenyls (PCBs) in power stations. PCBs among others are toxic substances released from power production activities into the environment posing deleterious health effect to humans and animals. In this study, concentration levels of 12 PCB congeners (PCB-18, 28, 31, 44, 52, 101, 153, 118, 138, 149, 180 and 194) in water, soil, dust and sediment samples collected within Ijora Olopa Power Station, Lagos, Nigeria, were determined with the aim of estimating the risk associated with human exposure to the release of PCBs due to leakages of electrical fluids from transformers during maintenance and day to day power production activities. Ultrasonic extractions were carried out on each sample using hexane followed by clean up procedure on a solid phase extraction (SPE) prior to analysis using gas chromatography coupled with electron capture detector (GC-ECD). Repeatability was determined by replicate (n=3) injection and reproducibility at n=7, in 4 days.

The coefficient of variation for within precision run and day to day precision ranged from 2.104 to 11.925% and 2.374 to 13.131% respectively. The method was linear and characterized by good correlation coefficients (>0.99) for all compounds studied. The concentration of PCBs detected in the soil samples ranged from 1.417 to 55.083 ng/g. The sediments had PCBs concentration ranging from 3.333 to 166.417 ng/g. PCB 52 had the highest concentration level in the water sample with value of 48.400 ng/g while for the dust sample, the concentration of PCBs varied from 27 ng/g to as high as 707 ng/g for PCB 138. PCB-153, PCB-138, PCB-180 and PCB 194 were present in most of the samples. The concentration levels of PCBs in the samples revealed that continuous exposure through dermal contact, evaporation (inhalation), and ingestion for workers within the power station is very likely to result in detrimental effects, particularly for those in the transformer repair section, where the sample had highest levels and congeners of PCBs.

Keywords: Polychlorinated biphenyls (PCBs), Power station, Risk assessment, Soil

CONSERVATION ATTITUDES AND CHALLENGES: A STUDY OF FOREST ELEPHANTS IN OKOMU NATIONAL PARK, EDO STATE, NIGERIA

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Elephants in Nigeria exist in small, fragmented, relict populations. Their habitats are most often in close proximity to local communities which results in Human-Elephant Conflicts. This study was aimed at determining the awareness of and attitudes towards the conservation of the elephants in Okomu National Park (ONP). Field observations, Enumerator-administered questionnaires and interviews were used for data collection. The people are aware of the role of protected areas to boost conservation of plants and animals.
(94%). Only 54% agree that ONP is serving the purpose of protecting wildlife. The highest threats to sustainability of wildlife identified in ONP are hunting activities (100%), development around the forest (82%) and logging activities (74%). Lack of a buffer zone put elephants in close proximity to farmlands. 56% of the respondents have had their crops raided in the last three years. Crop raiding/damage, non-payment of compensation and perceived highhandedness of Park staff are some of the factors that has led to the negative perception of people on conservation of wildlife especially elephants in ONP. The population of elephants in ONP is small and exist in a forest island isolated by farms and human habitation. Changing the attitude of local communities through conservation education and effective mitigation methods can serve as a means for sustainable conservation.

**Keywords:** Forest elephants. Okomu National Park (ONP), conservation attitudes, conservation challenges, Human-Elephant Conflicts

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**BIOINFORMATICS ANALYSES OF GENES CAUSING SUSCEPTIBILITY TO TYPE 1 DIABETES MELLITUS IN HUMANS**

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This research was carried out to investigate the genomic expression profiles and screen for differentially expressed genes (DEGs) in Type 1 Diabetes Mellitus (T1DM) in humans. A meta-analysis was conducted using the GEO data sets (GSM1329616, GSM1329617, GSM1329626, GSM1329627, GSM228562, GSM228563, GSM228582, GSM228583, GSM1329618, GSM1329619, GSM1329628, GSM1329629, GSM228564, GSM228585, GSM228584, and GSM228585). The datasets included samples from T1DM and normal patients. The DEGs were screened and the exclusively expressed genes were uncovered through the venn diagrams and heat maps functions in R language. The Gene Ontology (GO) categories analysed the significant biological functions. The key functions of the DEGs were investigated by KEGG pathway enrichment analysis and the potential functionally important SNPs were selected from the dbSNP database. 3,824 genes were classified as DEGs of which 2,030 were upregulated and 1,794 were downregulated. Seven key genes (TLN1, ANPEP, F13A1, SPARC, SPTBN1, IGHA2 and IGHA1) were exclusively expressed in the whole progression. 58 DEGs were revealed through the venn diagrams while the heat maps showed the differential expression data for 35 genes. IGHA1, IGHA2, IGKV4-1 were significantly expressed and upregulated. GO analysis revealed that these genes are involved in protein binding and catalytic activities. Metabolic pathway is implicated as the most significant dysfunctional pathway followed by the MAPK signaling pathway. A total of 265 pathways were significantly associated with the downregulated DEGs and 271 pathways with the upregulated DEGs. Further analysis with OMIM showed gene to disease relationships. These results provide some underlying biomarkers for early diagnosis of Type 1 Diabetes Mellitus.

**Keywords:** Microarray Data; Differentially Expressed Genes; Type 1 Diabetes Mellitus; Gene Expression Omnibus.
MULTI-BIOMARKERS IN CLARIAS GARIEPINUS EXPOSED TO SUBLETHAL CONCENTRATIONS OF POLYCYCLIC AROMATIC HYDROCARBONS

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Polycyclic aromatic hydrocarbons (PAHs) are priority pollutants due to their documented ubiquity and toxicity. In this study, the physiological, biochemical and histological indices in Clarias gariepinus (African Catfish) broodstock and embryos exposed to sublethal concentrations (1/10th 96hrLC$_{50}$) of naphthalene, phenanthrene and pyrene were investigated. The results showed that phenanthrene (1.41mg/l) was the most toxic, followed by pyrene (1.53mg/l) and naphthalene (7.21mg/l) based on the 96hrsLC$_{50}$ values. The physiological indices in the broodstock C. gariepinus revealed that there was a significant ($P<0.05$) decrease in the cardio-somatic indices of male and female C. gariepinus exposed to sublethal concentrations of phenanthrene and pyrene respectively compared to the solvent control. There was also a reduction in the fecundity of the female C. gariepinus exposed to sublethal concentrations of naphthalene, phenanthrene and pyrene by factors of x2.4, x2.8 and x2.4 respectively compared to the solvent control. There were no significant ($P>0.05$) differences in the malondialdehyde, reduced glutathione and antioxidant enzymes (superoxide dismutase, glutathione-s-transferase and catalase) levels in the gills and liver of C. gariepinus exposed to the PAHs compared to the solvent control. Histological alterations observed include; oedema, inflammatory cells, epithelial lifting and hyperplasia (gills); vacuolation, haemosederin pigments and sinusoidal congestion (liver) and degenerated zona radiata (ovary). There was no teratogenic effect of the PAHs on C. gariepinus as evidenced by the lack of histological alterations in the embryos spawned from the broodstock. The study recommends the utilisation of multiple biomarkers for a holistic evaluation of pollutant effects in ecological monitoring programmes.

Keywords: Clarias gariepinus, Histological indices, Multi-biomarkers, Polycyclic aromatic hydrocarbons, Physiological indices

PHYSICOCHEMICAL ANALYSIS AND ISOLATION OF COLIFORM BACTERIA IN WATER SAMPLE FROM FEMALE HOSTELS OF A TERTIARY INSTITUTION IN LAGOS, NIGERIA

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Physico-chemical parameters as well as the microbial quality of borehole water obtained from female hostels were conducted in a tertiary institution in Lagos from September to
October 2014. A total of seven (7) water samples were obtained and assessed for the presence of coliform bacteria using most probable number techniques. The study showed that *E. coli*, *Klebsiella spp.* and *Pseudomonas* spp. were isolated from the water samples assessed. However, the physico-chemical parameter studied showed that some of the water had odour with a metallic taste which is contrary to World Health Organisation (WHO) 2009 standard. The water conductivities ranged from 95-288µm which is still within the limit of standard. The total hardness of the water was also below acceptable limit as it ranged from 10ppm-25ppm which was classified as soft water. Some of the water was slightly acidic as the pH value of the water ranged from 5.9-7.0 while the acceptable range by WHO is 6.5-8.5. The water samples assessed in these hostels were not fit for consumption based on the microbiological and physicochemical analysis carried out on the samples. It is therefore recommendable that water treatment method such as boiling and filtration should be appropriate before being used.

**Keywords:** water sources, bacteriological analysis, physicochemical parameters

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15/SCI/26

THE COMPARATIVE EVALUATION OF THE COMPOSITIONAL CHANGES IN LIME (*CITRUS AURANTIFOLIA*) JUICE STORED ON WOODEN AND CEMENTED SURFACES

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Microbial community structure, compositional and physicochemical changes were investigated in samples of lime juice stored in plastic bottles at 27°C±2 on wooden and cemented surfaces at intervals of 72 hours over a period of one month. Control samples were stored on cemented surfaces but wrapped in aluminum foil to prevent direct effect of radon gas from cement. At the end of the study, *Candida albicans* was isolated from all the samples at population density of $1.2 \times 10^4$, $10.0 \times 10^4$ and $8.0 \times 10^4$ cfu/ml in the cement, wooden and aluminum-wrapped samples respectively. Samples on cement surface showed a reduction from 9180-6140 NTU, 1.88-1.28 and 2.26-2.24 while results for samples on wooden surface ranged from 5790-6740 NTU, 1.88 - 1.52 and 2.26 - 2.29 for turbidity, optical density (OD) and pH respectively. Results for the control samples ranged from 9870-5880 NTU, 1.88-1.38 and 2.26 - 2.28 for turbidity, OD and pH. Gas chromatography- mass spectrometry (GC-MS) analysis indicated the aluminum wrapped samples retained 91-99% of their fatty acid components and had less degradation of nutrients compared to the experimental samples. Results showed that lime essential oils which are used as flavoring agents in beverages, foods and pharmaceuticals are better preserved when lime juices are stored in the dark and non-cemented surfaces away from radioactive radon gas emitted from cemented surfaces.

**Keywords:** Radioactive elements, Radon gas, Lime juice, Cemented surface, wooden surface.
PALAEOECOLOGICAL RECONSTRUCTION OF THE QUATERNARY IN THE LAGOS METROPOLIS OF NIGERIA

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A Palaeo environmental investigation was conducted through a drilling project of a 45m bore hole on a creek at the University of Lagos. Sixteen soil samples were collected at an interval of 3m between the depth of 0m and 45m and were subjected to palynological, lithological, pH and salinity analyses. In the palynological study, a considerable number of palynomorphs were identified. The recovered palynomorph assemblage includes pollen of Alchornea cordifolia, Nymphaea lotus, Elaeis guineensis, Rhizophora sp., Avicennia sp., Combretaceae, Poaceae, Asteraceae, amongst others. Spores of Pteris sp. and Acrostichum sp., charred Poaceae cuticle; fungi elements as well as woody materials were also recovered in this study. From the lithological analysis of the samples, a considerable number of lithological types were recognized, varying in grain-size, grain-sorting and grain-texture. The pH and salinity values of the sediment samples also varied considerably at different depths. The palynological data revealed fluctuations in the past vegetation types that are representative of wet-dry climatic phases in the study area, suggestive of a probable instability that prevailed in past climatic regimes of the area. The preponderance of fungi elements and woody materials reflects a possibly terrestrial origin of high biological activities. The recovery of charred Poaceae cuticle reveals a seeming resultant heat wave of a dry climate or anthropogenic influence, probably resulting from bush burning in the surrounding environment at the period of sediment deposition. The data obtained from lithological, pH and salinity analyses elicit a mosaic of sedimentary depositional environment in which the recovered palynomorphs were preserved.

Key words: Palynomorphs, Vegetation types, Depositional environment, Climatic regimes, Anthropogenic

MICROBIAL QUALITY OF PUBLIC SWIMMING POOLS

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The microbial quality of some public swimming pools in Lagos state, Nigeria was investigated to determine the risk of spread of diseases and infections in pools. Ten different swimming pools (Pools A-J) were investigated for their microbial and physicochemical qualities. The pH of the swimming pools ranged from 5.24-8.71 and the residual chlorine ranged from 0.01-0.07. Water samples from the swimming pools were serially diluted and cultured on Nutrient Agar, Eosin Methylene Blue Agar, Salmonella Shigella Agar, Pseudomonas Base Agar, Mannitol Salt Agar and Potato Dextrose Agar. Eight bacteria were
isolated and identified using Microbact 24E kit, while the fungal isolates (6) were identified by microscopy, Gram’s staining and chloramphenicol test. The isolates include *Aeromonas hydrophila* strain (1), *Burkholderia pseudomallei* strain (1), *Aeromonas hydrophila* strain (2), *Serratia marcescens*, *Aeromonas hydrophila* strain (3), *Burkholderia pseudomallei* strain (2), *Enterobacter agglomerans*, *Aeromonas hydrophila* strain (4), *Candida albicans* (3), *Saccharomyces* sp. (2) and *Aspergillus flavus* (1). The microbial loads varied with different swimming pools. The fungal population ranged from zero in Pools D, E and G to 4.7×10⁴ cfu ml⁻¹ in Pool C, while the bacterial population ranged from zero in Pool C, G, H, I and J to 1.12 x 10⁵ cfu ml⁻¹ in Pool A. The least coliform count of 2 colonies /100 ml was observed in almost all the samples, while the highest coliform count of 6/100 ml was observed in pool B. Antifungal sensitivity test showed 50% susceptibility to nystatin and 50% resistance to voriconazole. Most of the bacteria isolated were resistant to ceftazidime, cefuroxime, gentamicin, cefixim, ofloxacin, augmentin, nitrofuratoin and ciprofloxacin. The Multiple Antibiotics Resistance (MAR) index for all isolates ranged from 0.125 to 1.000. The high microbial loads and the types of microorganisms isolated from the pools shows that contaminated swimming pools can constitute a serious public health hazards to the users, thus necessitating urgent and effective intervention.

*Keywords:* Swimming pools, Bacteria, Fungi, MAR index, Plasmids

15/SCI/29

**TECHNICAL FEASIBILITY AND ECONOMICS OF DIRECT APPLICATION OF THE NIGERIAN TAR SAND DEPOSITS AS ROAD ASPHALT**

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This study present, the technical feasibility and the Economics of the direct application of Nigerian Tar sand deposits as road asphalt. Twenty (20) Tar sand samples were selected from nine locations in parts of south western Nigeria and several engineering tests was conducted on twenty samples collected in the field. The test involved Bitumen extraction to determine the percentage of bitumen content, Sieve analysis, Specific gravity and Marshall test which include the Stability, Flow, Density and Void determination. The percentage of bitumen ranges from 5.6 to 28.6%, the stability values ranges from 2.1 to 6.3KN, the flow values ranges from 27.8 to 63.1mm10, specific gravity values ranges from 1.79 to 2.35g/ml and density values ranges from 1.74 to 2.01g/ml. The sieve analysis results indicates that none of the samples could be applied directly as use in road construction, though some of them possess stability and flow values that meet the standard specification for wearing course of asphalt. Design mix analysis which involves modification of mineral aggregates was carried out on ten out of the twenty samples to improve their gradation. From economic point of view, using the modified aggregates of tar sand (₦7,000-9,500 per ton) as against current asphalt concrete (₦20,000 per ton) would have potentially large cost savings in Nigeria.
MONITORING OF CONCENTRATION OF AIR POLLUTANT FROM VEHICULAR EMISSION ALONG MAJOR HIGHWAYS & BYPASS WITHIN KOSOFE LOCAL GOVERNMENT AREA

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Vehicular emissions are considered a major source of urban air pollution. Pollutants from these emissions whether as individual compounds or by synergistic interaction impacts negatively on public health, vegetation and climate. In this paper, we evaluate baseline concentration of carbon monoxide (CO), oxides of nitrogen (NOx), sulphur dioxide (SO2) and particulate matter (PM) from vehicular emissions during peak and off-peak periods along 3 major highways within Kosofe and Ikeja Local Government Area (LGA) of Lagos State.

Air quality monitoring/gas detection equipment were used to measure (in-situ method) ambient levels of the pollutant in nine locations within the selected area. The results reveal that the Federal Ministry of Environment’s Ambient Air Quality Standard limit was exceeded by most of the gases in majority of the location. Statistical analysis revealed significant variations in the concentration of this gas across locations. Heavy vehicular traffic, poor traffic management, poor/inadequate discipline, poor road infrastructure and frequent traffic congestion were observed as factors responsible for the high pollutant concentration.

FORECASTING THE TAIL DENSITY OF NIGERIAN EXCHANGE RATES FROM A MIXTURE AUTOREGRESSIVE MODEL

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Forecasts play a very significant role in economics, finance, and other fields of application of time series analysis. Density forecasts have become more popular as real life scenarios require not only a forecast estimate but also the uncertainty associated with such a forecast. Applications of density forecasts span across various industries, including macro economics and finance. A very important area is risk management. The class of mixture autoregressive (MAR) models provides a flexible way to model various features of time series data and is very well suited for density forecasting. The MAR models are able to capture many stylised properties of real data, such as multi-modality, asymmetry and heterogeneity. We compare the out-of-sample tail forecast density of Nigerian exchange rates using MAR models with Gaussian and Student-t innovations and Glosten et al. (1993)’s GJR-GARCH model with both Gaussian and student t innovations as well as some other asymmetric GARCH models. The MAR (3;2,2,1) models with fat-tailed Student-t distributions delivered the best out-of-sample tail density forecasts. Our study suggests that the MAR models are well suited to capture the kind of data dynamics present in financial data and provide a useful alternative to other methods.
**Keywords:** Mixture Autoregressive Models, Density Forecasts, GARCH models, Time Series Analysis, Exchange rate

15/SCI/32

**ANTIBACTERIAL ACTIVITY AND ANTISEPTIC POTENTIAL OF NOVEL COPPER (II) COMPLEXES DERIVED FROM 4-AMINOPHENOL SCHIFF BASES**

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Antibacterial resistance is one of the growing problems that make treating infections difficult. Schiff base metal complexes are a class of compounds with interesting antibacterial properties.

In this study, six new copper (II) complexes of isomeric Schiff bases; 2-methoxybenzylidene-4-aminophenol (A), 2-chlorobenzylidene-4-aminophenol (B), 2-nitrobenzylidene-4-aminophenol (C), 4-methoxybenzylidene-4-aminophenol (D), 4-chlorobenzylidene-4-aminophenol (E) and 4-nitrobenzylidene-4-aminophenol (F) have been synthesised. The compounds were prepared using condensation method. Structural and spectroscopic properties have been studied by elemental analysis, spectral (FT-IR, 1H NMR, UV-Vis) and magnetic susceptibility measurements. The Schiff base ligands and its complexes were screened in-vitro against the bacteria; *E. coli, S. aureus, P. aeruginosa, B. cereus, E. faecalis* and *K. Pneumonia*. The in-vitro antibacterial activity of Schiff bases and metal complexes show that some of the metal complexes exhibited higher antibacterial activities than the parent ligand. The results show that the investigated metal complexes can be an alternative therapeutic agent for bacterial resistance treatment. This study examined the effect of position of substituent on the antibacterial activities of the ligands and its metal complexes.

**Keywords:** Antibacterial agents, copper (II), metal complex, Schiff base, aminophenol.

15/SCI/33

**ON THE STABILITY AND PLASTICITY OF OBJECT ORIENTED AND ASPECT ORIENTED PROGRAMMING USING THE ADAPTIVE RESONANCE THEORY**

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The main thrust of separation of concern in software engineering is to use a programming paradigm that will allow the focus on a single concern per module in a software product.

Our work presents the use of Adaptive Resonance Theory (ART1) to determine the stability and plasticity of the Object Oriented programming (OOP) and the Aspect Oriented Programming (AOP) paradigms. The AOP is characterised by its twin attributes of obliviousness and quantification. These attributes are viewed in some quarters of the research community as a problem to producing stable software. We recall that the AOP is an
extension of the OOP paradigm. Its main objective is to solve the twin problem of tangling and scattering of concerns in software and to also provide a way to describe concerns. 

**Keywords:** Aspect Oriented Programming, Object Oriented Programming, Adaptive Resonance Theory, Separation of Concerns.

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**15/SCI/34**

**PRELIMINARY STUDIES ON THE DISTRIBUTION CHARACTERISTICS OF POTENTIALLY TOXIC METALS IN SOILS FROM A GOLD MINING SITE IN ILESA, OSUN STATE, NIGERIA**

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Artisanal and illegal mining of solid minerals pervade the entire country leaving behind their effects on the environment. Most of these artisanal and illegal miners are rural and poor and usually work without legal mining title. Their activities include mining of gemstones and gold and other activities that lead to unregulated mining which usually result in pollution of the environment and risk to man. Inductively Coupled Plasma Mass Spectrophotometer (ICP-MS) was used to determine the metal contents of soil samples collected at gold mining sites in Ilesa, Osun state, South Western Nigeria. The concentration of the metals analysed in the samples analysed were within the following ranges; Cr (17 to 64 mg/kg), Cu (3 to 66 mg/kg), Fe (5499 to 27345 mg/kg), Mn (46 to 1150 mg/kg), Ni (2 to 16 mg/kg), Pb (2 to 24 mg/kg) and Zn (5 to 256 mg/kg). The results obtained for Mn and Fe showed very high concentration of the metals which were above their permissible levels. The result of the analysis suggests that the metal concentrations of the sites resulted from mining activities which is expected to be higher in the nearest future due to bioaccumulation.

**Keywords:** bioaccumulation, distribution, mining activities, potentially toxic metals

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**15/SCI/35**

**NEURO-TRANSMITTER LEVELS AND AMINO ACID LEVELS AS BIOMARKERS FOR AUTISM SCREENING**

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**Introduction:** Autism spectrum disorder (ASD), often referred to as autism, is a clinically heterogeneous neuro-developmental disorder with core-defining features of impaired socialisation, impaired verbal and non-verbal communication and restricted and repetitive
patterns of behaviour. The disorder is presently diagnosed behaviourally, however the search for possible biomarkers that could aid earlier diagnosis have been on the increase. The present study aims to investigate plasma amino acid levels as a potential biomarker in ASD screening.

**Methods:** Plasma levels of 20 amino acids (AA) (including neurotransmitters- GABA and glutamate) of autistic individuals and typical age and sex matched control were determined using reversed-phase high performance liquid chromatography (RP-HPLC). All statistical analyses (independent t-test, spearman correlation, Cohen’s d effect size) were done using IBM SPSS version 20.

**Results:** A total of 31 plasma samples (18 autism cases and 13 age-sex matched controls) were analysed with mean ages 8.44±4.87 for cases and 8.15±4.88 for controls. No significant intergroup difference was observed in the individual amino acid levels with the exception of glutamate ($t = 5.472, df = 2.324, p = 0.000063$), glutamine ($t = 8.342, df = 14.780, p = 0.000001$), GABA ($t = 6.601, df = 24.593, p = 0.000001$), tryptophan ($t = 3.568, df = 16.472, p = 0.002$) and cysteine ($t = 4.000, df = 13.762, p = 0.001$).

**Conclusion:** The amino acid profile and the glutamate - GABA levels can serve as biochemical markers for ASD, and can thus be utilised as screening for earlier diagnosis of the disorder.

**Keywords:** Autism, biomarkers, neurotransmitters, GABA, Glutamate

15/SCI/36

**PREVALENCE OF DRUG ABUSE AMONG ADOLESCENTS: IMPLICATION FOR COUNSELLING**

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In Nigerian society, use of alcohol and drug has always been part of the heritage either as part of rituals or other ceremonies. Recent research findings show that use of drug and alcohol is widely accepted by the adolescents group, Ona, (1985). As a result of this, drug abuse is waging war against effective teaching and learning. The involvement of students particularly adolescents in various activities are traceable to drug abuse. This paper discussed and examined the concept, cause and effect of drug abuse among adolescents and provided solutions to the problem of drug. The study has implications for schools policy makers, stakeholders and professional counsellors since drug abuse is considered as an important subject matter in mostly Africa. It is therefore suggested that government should make available functional professional guidance counsellors including counselling centres equipped with up to date infrastructures for the treatment of identified drug abused students. Effort should be made by guidance counsellors to train students on drug abuse.

**Keywords:** Drug abuse, Adolescents and Guidance Counsellor.

15/SCI/37
MODELLING HIV/AIDS DISEASE PROGRESSION USING HOMOGENEOUS SEMI-MARKOV PROCESSES
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Abstract
The aim of this paper is to model the HIV/AIDS disease progression using Homogeneous Semi-Markov to predict the probability of transition from one state to another and the length of stay that has been spent by a person with the Human Immunodeficiency Virus (HIV) infection. The result showed that conditional probability for a patient stays in state SI, SII, SIII and SIV for at least 4 years are 0.289, 0.097, 0.679 and 0.569 respectively. Also, the probabilities of leaving state i ∈ {SI, SII, SIII, SIV}, which is lowest in SI and highest in SIII. The average time was considered it was found out that the average time of visit per patient in State I was 10.35. A patient entering the model in State II is expected to visit the hospital for 11032 time units which on the average is 19.08 per patient, a patient entering the model in State III is expected to visit the hospital for 11001 time units which on the average is 4.05 per patient and a patient entering the model in State IV is expected to visit the hospital for 11016 time units which on the average is 4.93 per patient.

REMOVAL OF CADMIUM (II), COBALT (II) AND NICKEL (II) FROM AQUEOUS SOLUTION USING CORNCOB WASTE
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The rapid spate of development of many industries leads to wastes containing heavy metals being directly or indirectly discharged into the environment. This study employed the adsorption of cadmium (II), cobalt (II), and nickel (II) on corncob, an agricultural waste has been studied in batch mode at room temperature using flame atomic absorption spectroscopy for metal estimation. The study investigated the influences of adsorbent dosage, solution pH, contact time, and initial metal concentration on the removal of metal ions. The Langmuir and Freundlich isotherm models were used to fit the equilibrium adsorption data. The reaction kinetics of the cadmium (II), cobalt (II) and nickel (II) removal from the aqueous solution were identified and correlated to the pseudo first- and second-order kinetic models. The results show an increase in adsorption by metal ions studied with an increase in adsorbent dosage. Metal uptake showed a pH-dependent profile with optimum at pH values 4.0 for Cd (II) as well as Ni (II), and 8.0 for Co (II) ions. The Freundlich adsorption isotherms model fitted the experimental data best with the regression coefficient ranging between 0.837 and 0.989 for the metal ions. A kinetic study of the adsorption process showed that adsorption of cadmium (II), cobalt (II), and nickel (II) on corncob was observed to follow closely to the pseudo-second-order. It was concluded that
CORNCOB EXHIBITED RAPID ADSORPTION CAPABILITIES AND HIGH EFFICIENCY IN REMOVAL OF CADMIUM (II), COBALT (II) AND NICKEL (II) IONS FROM AQUEOUS SOLUTION.

**Keywords:** corncob, isotherms, adsorption, biomass, spectroscopy, aqueous solution

15/SCIE/39

**PRODUCTION OF CHITIN FROM SHRIMP WASTE FOR THE CULTIVATION OF CHITINOLYTIC BACTERIA**

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Chitin is a potential resource as well as multiple functional substrates. Chitin and its derivatives or products has numerous importances to man in the agriculture, health and food sectors of any economy. It is the second most abundant biopolymer in nature. It protects crustaceans, parasites, fungi and other pathogens from the adverse effects of their environment, hosts or both. Chitin has a lot of important uses as antioxidant, antihypertensive, anti-inflammatory, anticoagulant, antitumor, anticancer, antimicrobial, hypcholesterolemic and it has antidiabetic effects. Despite the various uses of chitin, the cost of importing chitin is extremely high. This study was therefore carried out to produce chitin from shrimp waste available locally in the Nigerian market. The chitin powder was employed in the preparation of colloidal chitin agar medium. The chitin was used for the cultivation of chitinolytic bacteria obtained from the gut of catfish. The results of this study revealed that two of the ten bacterial isolates from the gut of the African Catfish (*Clarias gariepinus* Burchell 1822) produced chitinase. This is an indication that the chitin used for the colloidal chitin medium was effective. The result of this study will be very useful in the production of chitin for industrial uses.

**Keywords:** Chitin; Chitinolytic Bacteria; African Catfish; Bacillus

15/SCIE/40

**EVALUATION OF INDUSTRIAL DISCHARGE POINT SOURCE POLLUTION IN IKEJA INDUSTRIAL ESTATE, IKEJA, LAGOS, NIGERIA**

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The rate of pollution of water bodies (rivers, streams, lakes etc.) by industrial and domestic waste discharge is alarming and on the increase daily. This study was an attempt to assess the physico-chemical and heavy metal parameters from waste water and sediment samples from drainage discharge point source pollution of brewery, textile, paints, confectionary,
and Fibre-cement roof industries in Ikeja Industrial Estate, Lagos in dry and wet seasons for evaluation of their quality and compare the data obtained with local and international regulatory standards. Among the parameters determined are colour, pH, temperature, electrical conductivity, total dissolved solid, biological oxygen demand (BOD), chemical oxygen demand (COD), chloride, sulphate, and phosphates using standard methods and procedures. The levels of heavy metals in the water and sediment samples were determined using Atomic absorption spectrophotometer (AAS). The concentrations of pH, temperature, BOD, COD, and orthophosphate –P in the water samples were higher than the FEPA limit. Results of analysis of variance (ANOVA) revealed that there was no seasonal significance difference in water and sediment samples (p > 0.05) in all the sampling points. The concentrations of Cd, Cu, Pb, Cr, Zn and Ni in water and sediment samples were higher than the FEPA maximum limit in one or two sampling points along the drainage system. This study revealed that some of these industries still discharge untreated or partially treated waste water into the environment through the drainage system. There is need for regular monitoring and compliance enforcement by appropriate Government Regulatory Agencies on regulatory requirements.

**Keywords**: Pollution, industrial wastewater, heavy metals, discharge point source.

MICROBIAL ASSESSMENT OF HERBAL PRODUCTS IN OTA AND ITS ENVIRONS

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This study was carried out to assess the microbial quality of herbal medicinal products being sold in Ota and its environs. The herbal products analysed in this study were oral remedies prepared using water. A total of 24 bacterial isolates were identified from different 32 herbal products purchased from 8 sellers in different parts of Ota. These bacterial isolates were identified on the basis of their morphological, cultural and biochemical characteristics on various selective media. The total plate count (TPC) for bacteria in the herbal samples analysed ranged from $1.1 \times 10^3$ to $9.3 \times 10^3$ CFU/ml; while the total fungal count ranged from $1.0 \times 10^1$ to $9.8 \times 10^1$ CFU/ml. The bacterial and fungal counts of the herbal products increased with the period of storage (24, 48, 96 hours). Bacterial isolates obtained from this study belong to four genera; *Escherichia coli*, *Vibrio cholerae*, *Salmonella typhi* and *Staphylococcus aureus*. 60% of the herbal products analysed were contaminated with *Escherichia coli*, 50% by *Vibrio cholerae*, 30% of *Staphylococcus aureus*, and 40% with *Salmonella typhi*. The antibiotic resistance and susceptibility patterns of the isolates were also determined. 45% and 36% of the isolates of *Escherichia coli* were resistant to ofloxacin and ciprofloxacin respectively; all the *Staphylococcus aureus* identified were sensitive to ofloxacin and ciprofloxacin; 80% of the *Vibrio cholerae* isolates were resistant to ofloxacin; and 50% of the *Salmonella typhi* isolates identified were resistant to ofloxacin and ciprofloxacin. All the bacterial isolates recovered from herbal products in this study were resistant to cefuroxime, ampicillin, and cefazidime. The result of this study revealed the need for adequate quality control measure to be put in place for herbal preparations used for commercial purpose in order to safeguard the health of the public.
Anthropogenic activities are major sources of phosphate and nitrates pollution in aquatic ecosystems. These nonpoint sources of nutrients are difficult to measure and regulate because they are derived from activities dispersed over large expanse of land and are time variable because of weather and climate changes. Toxic algal blooms, hypoxia, fish deaths, loss of biodiversity and species composition, loss of aquatic plant beds, coral reefs are parts of their effects in water bodies. Nutrient enrichment seriously impairs aquatic ecosystems usage, purposes and functions. In this study impacts of human activities on the nitrates and phosphate level of Nwaja Creek in the upper Bonny Estuary of the Niger Delta, Nigeria were studied. Samples were collected from seven sampling stations (S1 to S7) along the creek from May to July, 2015 (rainfall’s peak period). Temperature, pH, dissolved oxygen (DO), nitrate and phosphate content were analysed using standards methods and procedures. DO, Nitrates and phosphates have high variation across sampling stations and were very high when compared to other creeks surface water in Niger Delta. pH ranged between 4.16 – 7.01, temperature ranged between 21.5 – 30.05 °C, DO ranged between 4.50 – 13.50 mg/L, phosphate ranged between 0.89 – 14.91 mg/L, nitrate ranged between 0.56 – 9.96 mg/L. The statistical analysis of the parameters indicates that Nwaja creek surface water is highly polluted. Its phosphate level is above FEPA permissible limits (13.50>5.0 mg/L) and nitrate is significantly same (9.96=10.0 mg/L). There is urgent need for constant monitoring and assessment of these creeks for other pollutants (physicochemical, heavy metals, hydrocarbons etc.).

Keywords: Anthropogenic, nitrate, phosphate, Nwaja creek, surface water, monitoring
COMPRENDIUM OF MEDICINAL PLANTS FOR THE ETHNO-THERAPEUTIC MANAGEMENT OF TUBERCULOSIS AND OTHER RESPIRATORY DISEASES

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Globally, plants are used in many cultures to treat Tuberculosis (TB) and TB related symptoms including cough and other respiratory diseases. Many useful articles on phytotherapy of tuberculosis in many ethnomedical practices have been reported. Interestingly, most of the works are focused narrowly on the culture of extraction or of interest of the researchers. This treatise is a review of medicinal plants for the treatment of Tuberculosis and other respiratory diseases across different ethnic groups and cultures. It was hypothesised that efficacious plant families and species are more likely to feature frequently in the prescriptions of many ethno-therapy, and they are likely to contain promising anti-tubercular compound(s) that are drug candidates or drug leads. A total of 527 plant species belonging to 129 families reported in literature in the last 15 years were analysed. The profile revealed that family Asteraceae is the most frequently used plant species (FC = 49, and ethnobotanical index of 0.0930) for the treatment of tuberculosis across the studied ethnic and cultural groups. This is followed by Euphorbiaceae with FC= 32, and then Rubiaceae and Rutaceae with FC of 25 and 22 respectively. The findings highlight the medicinal importance of the plant family Asteraceae in ethnomedical remedies of Tuberculosis and that the genus under the family are possible potential source of anti-tubercular drug candidates worthy of extensive investigation.

Keyword: Indigenous knowledge, ethno-medicine, anti-tubercular activity, Asteraceae, Euphorbiaceae, Rubiaceae

COMPOSITION AND ABUNDANCE OF ODONATES AT ALATORI STREAM, SOUTH-WESTERN NIGERIA

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Forest and open areas of Babaoku village in Akure forest southwestern Nigeria was surveyed for 2 years (May 2008 to April 2010) to determine the abundance and community assemblage of Odonata fauna in the village vicinity. Sampling of Adults and larvae specimens were mainly at Alatori stream, the main water body at the village. Only penultimate and ultimate larvae were sampled and reared to adults. A total 767 adult specimens and 108 larvae were collected. Only 49 larvae eclosed (emerged) to teneral adults out of 108 larvae specimens collected. The percentage composition of Odonata families occurring at the stream shows that Libellulidae is the highest (36.54%) followed by Chlorocyphidae (20.6%) and the least is Megapodagrionidae (0.65%). The occurrence of
member of families Megapodagrionidae, Chlorocyphidae and Calopterigididae indicates that the stream ecosystem can sustain the species with narrow niches. Analysis of variance (ANOVA) result revealed that conductivity, temperature and water depth played a major role in determining the odonates community structure of the streams. The mean and the standard deviation of conductivity (184.25 ± 6.37) were indicative of an unpolluted freshwater system with stable habitat structure. These attest to the fact that Alatori stream is healthy and possesses right structures that can sustain other flora and fauna within the ecosystem.

**Keywords**: Odonata, Abundance, Assemblage, Alatori stream

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15/SCI/45

**REVERSE FLOW INJECTION (rFI) TECHNIQUES FOR THE DETERMINATION OF NITROGEN AND PHOSPHORUS SPECIES IN SALINE WATER**

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Determination of nutrient species in saline water using flow injection analysis (FIA) could be challenging due to Schlieren effect (SE). Thus, reverse flow injection (rFI) methods were developed for the determination of nitrogen (N) and phosphorus (P) species in estuarine water in order to overcome its spatial and temporal salinity variation. The rFI manifolds were validated and applied to the quantification of N and P species in the estuarine Lagos Lagoon water of different salinities (0.1–2.5 g L$^{-1}$). Water samples were collected at ten sites in 2012 and 2014 and digested with potassium persulfate. The rFI techniques were based on the analysis of N species by cadmium reduction in an on-line micro-column followed by the Griess-Ilosvay reaction and analysis of P species by the Murphy and Riley reaction. To eliminate SE, acid-molybdate reagent was injected into a 36.4 g L$^{-1}$ salinity carrier in P manifold, and N-(1-naphthyl) ethylenediamine reagent (NINE) was injected into a 0.16 g L$^{-1}$ salinity carrier in N manifold. In both manifolds, the reagent injection volume was 100 µL. The method detection limit for phosphate-P analysis was 53 µg L$^{-1}$ while that of nitrate-N analysis was 0.10 mg L$^{-1}$. Average recoveries of PO$_4^3-$P and NO$_3^-$N were 107 % and 94.8 % respectively in spiked blanks. The range of soluble reactive P (SRP) was undetectable to 526 µg L$^{-1}$ at the top layer and undetectable to 669 µg L$^{-1}$ at the bottom layer of the Lagoon water. Total P (TP) ranged from 129–3,944 µg L$^{-1}$. The SRP, soluble organic P (SOP), total soluble P (TSP) and particulate P (PP) were 11.5, 16.2, 27.7 and 72.3 % of TP. [NO$_3^+$+NO$_2^-$]-N ranged from 0.16–0.44 mg L$^{-1}$. Total N (TN) ranged from 1.69–20.83 mg L$^{-1}$. The [NO$_3^+$+NO$_2^-$]-N, [NH$_4^+$+dissolved organic]-N, Total dissolved N (TDN) and particulate N (PN) were 4.0, 82.1, 86.1 and 13.9 % of TN. The developed rFI systems are suitable for P and N analysis of saline water and in this case, the results showed that upwelling of SRP from the sediment is likely responsible for a large percentage of P in the water column of the Lagoon.
LAGOS LAGOON SEDIMENT ORGANIC EXTRACTS INDUCE DEVELOPMENTAL
AND GENOTOXIC EFFECTS IN Danio rerio (Zebrafish) EMBRYOS

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A decline in fish catch has been documented in the Lagos lagoon over the years. Fish early life stages (ELS) are now being utilised in ecotoxicological studies as part of the 3Rs (replacement, reduction and refinement) principle. In this study, sediment organic extracts from four sampling zones (Ilaje, Iddo, Atlas cove and Apapa) on the Lagos lagoon were assayed for potential developmental toxicity and genotoxicity using Danio rerio embryos. Embryotoxic end points such as mortality, hatching, number of heartbeats per minute and abnormalities were assessed after 72 Hours Post Fertilization (HPF). Genotoxic evaluations were made in single cells obtained from 72hpf embryos via the unmodified and formamidopyrimidine-DNA-glycosylase (FPG)-modified alkaline single cell gel electrophoresis assays. The results of the embryotoxicity studies showed that percentage hatching was significantly (P<0.05) reduced in the highest Iddo sediment extract (24.33%) treatment compared to the solvent control. Percentage abnormality was significantly (P<0.05) increased in the highest Iddo (83%) and Ilaje (73.33%) sediment organic extract treatments. The developmental abnormalities observed include; stunted growth, mild to severe pericardial and yolk-sac oedemas, scoliosis, elongated heart, haemorrhaging, curved tail and tail tip curvature. The genotoxicity results revealed that percentage tail DNA in D. rerio cells was non-significantly (P>0.05) increased in the sediment organic extract treatments. The study showed that sediment-bound organic pollutants such as polycyclic aromatic hydrocarbons are contributory factors to the observed fish decline in the Lagos lagoon. Prompt regulatory measures to redress these as well as the incorporation of fish ELS in eco-monitoring programmes are therefore recommended.

Keywords: Sediment organic extracts, embryotoxicity, genotoxicity, fish early life stages, Lagos lagoon

ANALYSIS OF THE CHEMICAL CONSTITUENTS OF THE ESSENTIAL OIL FROM
THE LEAVES OF PTEROCARPUS OSUN, A PHYTOMEDICINE FOR ASTHMA, USING
GAS CHROMATOGRAPHY–MASS SPECTROMETRY

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Pterocarpus osun which belongs to the family of Fabaceae is commonly known as African rose wood. The root and stem bark of the plant are normally used for the management of
asthma, fungal/bacterial skin infections, eczema, acne and candidiasis. The plant is also an antipyretic. Hydrodistillation of the air-dried, pulverized roots of the plant was carried out using the clavenger apparatus and the essential oil obtained collected in two modes. In one mode, fractions of the essential oil were collected hourly over a 4 hour period whereas in another mode, a single collection was made after 4 hours. The analysis was on Gas chromatograph-Mass spectrometer (GC-MS) fitted with HP-5MS capillary column. The results of the analysis show the major constituents to be eugenol (4-Allyl-2-methoxyphenol) which has 27.76, 68.20 and 11.35% in 2nd, 3rd and 4th hours respectively and eluted as phenol, 2,6-bis(1,1-dimethylethyl) in the 4 hours single collection; (E,E,E)-3,7,11,15-Tetramethylhexadeca-1,3,6,10,14-pentaene (α-Springene) with 36.46% at the 1st hour, squalene and 6-Methyl-2-tridecanone (36.17%) which was collected after 4 hours. Squalene is an anti-cancer compound. The presence of eugenol which is both anti-inflammatory and antiasthmatic in high percentage suggests that the root of Pterocarpus osun may be useful in the management of asthma.

Keywords: Pterocarpus osun, asthma, essential oil, GC-MS.

15/SCI/48

SEREOLOGIC ANALYSIS AND MOLECULAR CHARACTERISATION OF HEPATITIS B VIRUS AMONG ANTIRETROVIRAL TREATMENT-NAIVE ADULT HIV PATIENTS ATTENDING A LAGOS UNIVERSITY TEACHING HOSPITAL

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Background: Hepatitis B virus (HBV) and human immunodeficiency virus (HIV) share common risk population and routes of transmission, as such; HIV patients are often coinfected with hepatitis B virus. The seroprevalence of HIV/HBV coinfection ranges from 6.3% to 39%, and studies have shown that HBV/HIV coinfected patients have a higher risk of developing liver cirrhosis and increased toxicity of the liver to antiretroviral medications. Our aim is to determine the seroprevalence of HBsAg among HIV patients attending the Lagos University Teaching Hospital, Idi-Araba, and to molecularly characterise the viral isolates. Methods: Serum samples from 300 HIV patients [104 (34.67%) males and 196 (65.33%) females], aged 18 years and above, who were first time attendees at the hospital clinic, were screened for HBsAg between March, 2012 and April, 2013, using ELISA technique. Samples positive for HBsAg were subjected to HBV DNA detection by PCR amplification of the S-gene and amplicon sequencing. Isolates were genotyped using a combination of molecular techniques. Results: Twenty five (8.33%) patients [19 (6.33%) males and 6 (2%) females] were positive for HBsAg. The infection was highest among males aged 38-47 years (36%), followed by females aged 28-37 years (24%). HBV DNA was detected in seven HBsAg-positive samples, and all were typed as genotype E subtype ayw4,
using the amino acid residues at positions 122, 127, 134 and 160. Three isolates had amino acids substitution at various locations on their sequence; HBV_12b had sL49R substitution, HBV_13b had sL49R and sG43E substitutions, and HBV_14b had sL109R and sG124R substitutions. **Conclusion:** This study has demonstrated that there are cases of HBV/HIV co-infection among the HIV patients studied, and further validates the fact that HBV genotype E is the prevalent genotype circulating in Nigeria.

**Keywords:** Serologic analysis; Molecular characterisation; HBV/ HIV patients ; University Teaching Hospital; Lagos.
PLASMIDS AND ANTIBIOTICS PROFILES OF ENTEROBACTERIACEAE ISOLATED FROM DIFFERENT COMMUNAL WATER SOURCES IN OGUN STATE

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Background
The increasing role of Enterobacteriaceae in antibiotic resistance, spread and reservoir is a pressing public health concern. This study was carried out to determine the plasmid profile and the antibiotic resistant patterns of water-borne Enterobacteriaceae recovered from some selected drinking water sources among 6 towns in Ogun State (Nigeria).

Methods
Seventy Enterobacteriaceae consisting mainly of Enterobacter spp, Escherichia coli, Klebsiella spp, Salmonella spp, Citrobacter freundii, Serratia spp were recovered and identified presumptively using standard microbiological and biochemical methods. The susceptibilities of the isolates to 11 antibiotics were carried out by disk diffusion method while the plasmid analysis was by alkaline lysis method. The susceptibility result showed that >90% of the isolates were resistant to 9 antibiotics while all the isolates were susceptible to imipenem and meropenem among the other antibiotics investigated. Out of 40 Enterobacteriaceae investigated for the presence of plasmids, 18 isolates were positive for the presence of plasmids by alkaline lysis methods. E. coli (4), Enterobacter spp (7), Klebsiella spp (7) with sizes range of 33.5 – >33.5kb.

Conclusion
Presence of bacteria with resistance plasmids present in drinkable water calls for urgent attention due to the danger it poses to humans who consume the water domestically.

Keywords: Plasmids, Enterobacteriaceae, Antibiotics resistance

EFFECT OF ACTION BITTER ON THE SPERM QUALITY OF MICE

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The quest to improve sexual satisfaction has been a recurrent issue hence different treatments have been geared towards that. Recently, attention has been focused towards the use of action bitters to improve sexual stamina. In this study, the effect of Action bitter on the sperm quality of mice was evaluated. 30 mice were administered with different concentrations of action bitter (0% - 100%) depending on their bodyweight for 35days. 100% action bitter led to 100% mortality of the mice after 2weeks. There was an inverse relationship between the body weight and the concentration of action bitters. The sperm count reduced with increased concentration of the bitter. The sperm count of the mice treated with the action bitter was significantly lower than that of the control (P<0.05). Also,
different structural abnormalities were observed in the study amongst which are tailless head, headless tail, double head, double tail, pin head and folded sperm. These results indicate that action bitters has adverse effect on sperm quality which may in turn affect fertility. It is therefore suggested that there should be regulation on the consumption of Action bitter to avoid its adverse effects associated with its consumption.

*Keywords*: Action bitter, sperm quality, abnormalities, sexual enhancement

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**15/SCI/52**

**SOME REFINEMENT OF HOLDER’S AND ITS REVERSE INEQUALITY**

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Holder’s inequalities and their refinements, and reversing have received considerable attention in the theory of Mathematical Analysis and Differential equations. We give some refinements of Holder’s and its reverse using simple analytical technique of integral calculus. Our results shows that many existing results related to refinements and reverse of Holder’s inequality are special cases of the inequalities presented here. This work is applicable to problems arising from engineering and related discipline.

*Keywords*: Young’s inequality, Kittaneh-Manasrah’s inequality, Holder’s inequality, Integrable functions, Refinement.

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**15/SCI/53**

**SYNTHESIS OF SUBSTITUTED BENZOTHIADIAZINES VIA [Fe(F$_{20}$TPP)Cl]-CATALYSED INTRAMOLECULAR NITRENE-$sp^3$ BOND INSERTION**

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The synthesis of substituted 1,2,4-benzothiadiazines has been previously achieved in various ways. In this work, the synthesis of bicyclic and tricyclic benzothiadiazines through the iron(III) [tetrakis(pentafluorophenyl)]porphyrin chloride [Fe(F$_{20}$TPP)Cl]-catalysed intramolecular formation of nitrene followed by $sp^3$ C-H bond activation to afford heterocycles of interest is reported.

The sulphonylation of various secondary amines gave ortho-nitrobenzenesulphonamide adducts, which were catalytically hydrogenated on palladium/charcoal to furnish the ortho-amino derivatives, under inert atmospheric condition. The resulting primary amine-containing adducts were subsequently cyclised via the intramolecular insertion of nitrene into the $a$-C–H $sp^3$ bond of the (cyclo) amines. All the C–H bond amination products were imines. This is attributable to the probable oxidation of the amine intermediates by (diacetoxyiodo) benzene [PhI (OAc)$_2$] under the reaction conditions employed; only imines
were obtained after the complete consumption of the reacting substrates. Moderate to good yields are reported. A mechanism of reaction is also proposed.

**Keywords:** Benzothiadiazines, Nitrene \(sp^3\)-C–H bond insertion, \(\text{Fe}(\text{F}_{20}\text{TPP})\text{Cl}\), cycloamines

![Reaction Mechanism](image)

**References**


15/SCI/54

**FACILE SYNTHESIS OF ANGULAR TRICYCLIC QUINOXALINONES VIA CATALYTIC HYDROGENATION**

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Quinoxalinones have continued to find applications in many spheres of human endeavour including pharmaceuticals, medicine, agrochemicals and allied industries.\(^1\)\(^2\) The synthesis of substituted tricyclic quinoxalinones 8–13 was achieved via the catalytic reduction of the substituted \(N\)-(o-nitrophenyl)cycloamino-2-carboxylic acid adducts (or esters) 1–7, in ethanol, with 10% palladium on activated charcoal catalyst, in good to excellent yields. The acid adducts 1–7 were obtained by the reaction of substituted o-halogenonitrobenzenes with various cyclic amino acids under alcoholic basic conditions.\(^3\) The condensation reactions involving the o-fluoronitrobenzenes required less reaction times and afforded better yields relative to those of the o-chloronitrobenzene substrates.

**Keywords:** Tricyclic quinoxalinones, hydrogenation, palladium/charcoal, cyclic amino acids
HEPATIC BIOCHEMICAL, HAEMATOLOGICAL AND WEIGHT INDICES OF OCCUPATIONAL EXPOSURE TO VOLATILE ORGANIC COMPOUNDS IN TWO PRINT SHOPS IN LAGOS USING Mus Musculus

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Solvents and inks used in printing presses are major sources of occupational exposure to Volatile Organic Compounds (VOCs). In this study, questionnaires were administered to print shop workers to assess their knowledge of the potential health effects of VOCs. Hepatic biochemical, haematological and weight indices were evaluated in Mus musculus exposed to VOC emissions from two printing presses (Somolu and Mushin) and a control in Lagos for 45 days. VOC levels were also assessed. The questionnaire analyses revealed that print workers in Mushin experienced more symptoms compared to those at Somolu. Hepatic biochemical indices showed that reduced glutathione activity was significantly decreased (P<0.05) in mice at Mushin (0.50U/mg pro) compared to control (0.80U/mg pro). Malondialdehyde levels increased non-significantly (P>0.05) in exposed mice compared to control. Other biochemical indices decreased in the exposed mice compared to control. Haematological indices revealed that platelet counts in mice exposed at Mushin (1395.50 x 10^3 µl) increased significantly (P<0.05) compared to control mice (671.00 x 10^3 µl). White blood cells count decreased in exposed mice compared to control. Other haematological parameters were higher in exposed mice compared to control. A non-significant decrease (P>0.05) was observed in the weight of exposed mice compared to control. VOC levels were,
Mushin (612mg/m³) > Somolu (463mg/m³) > control (4 mg/m³). The study concluded that prolonged exposure to VOCs is harmful to human health. The use of personal protection equipment (PPE), awareness programmes on the occupational health hazards posed by VOCs and reduction of exposure through reduced-time shift regimes are therefore recommended.

**Keywords:** Biochemical indices, Haematological indices, *Mus musculus*, Occupational exposure, Volatile organic compounds

15/SCI/56

**SIGNIFICANCE OF FISH INTESTINAL PARASITES IN RISK ASSESSMENT OF HEAVY METAL POLLUTION IN AQUATIC ECOSYSTEM – A REVIEW**

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In this review, the significance of intestinal parasites in risk assessment of heavy metal pollution has been discussed with emphasis on the need for new approaches. Many non-pollution variables have additional impact on bioaccumulation and toxicokinetics of contaminants. Most available toxicity data rarely quantify the potency that these variables, rather, the extensive use of uncertainty factors in risk assessment. One of these is the parasites. Parasites are organisms that live on another organism (host) for metabolic sustenance and other benefits at the expense of the host. They change the behaviour and food intake of their host. Heavy metals bioaccumulated from the host food chain and that in the water medium get to the gut, where free metal ions alongside with other mineral nutrients are unlocked. The evidence of impact of gut parasitic infestation on bioaccumulation of heavy metals in host is unequivocal. The gastrointestinal tract is en route to the liver, an intestinal helminth parasite with weight ranged 10 mg to 15 mg had been reported to accumulate metals several magnitude greater than over 200 mg to 250 mg weight of the host liver. Infested fish have shown to accumulate less amounts of heavy metals than non-parasitized fish. This is dependent on the type of helminth parasites harbored, their bio-accumulation potentials, intensity of infestation and condition of the host. Some fishes harbor different parasites under heterogeneous infestation; this had resulted to irregularity in host tissue accumulation when compared with the non-infested individuals. Host density between sexes is one of the determinant factors for rate of parasitic infection, intensity and bioload. Intestinal cestodes, acanthocephalans and very few nematodes have been reported as very good accumulators of heavy metals in the environment. In field assessment study, presence of intestinal macro-parasites could either increase or decrease metal accumulation in the host, they could either dilute or concentrate the mean value in sample population. This is dependent on relative abundance of the parasitic congeners, their bioaccumulation potential in the host and prevalence in the host population. Non-consideration of macro-parasites in the use of fish in bioaccumulation and biomarker studies could either give a wrong positive or a wrong negative extrapolation of the quality of the environment. Integrated knowledge of aquatic biology, parasitology, and ecotoxicology could go a long way in solving highly puzzled environmental problems and improve designs in environmental monitoring programs.

**Keywords:** Risk Assessment, helminth parasites, Heavy metals, Bioaccumulation.
ASSESSMENT OF THE QUALITY OF DRINKING WATER IN FLOOD INFESTED AREAS OF AKOKA AND BARIGA IN LAGOS

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Degradation of drinking water quality is very likely to occur in flood infested areas. Most people depend on groundwater for their source of drinking water. As a result of floods, groundwater wells can become highly polluted due to the draining of pollutants from various sources. Poor water quality spreads disease, causes death and hampers socio-economic progress, especially in densely populated areas.

Monitoring of water quality in flood infested areas such as Akoka and Bariga, which are very close to the Lagos lagoon and are heavily populated is therefore a step towards saving of lives. In this study, 8 tap and 2 well water samples were collected for the determination of the physico-chemical and chemical parameters as well as heavy metals. Heavy metal digestion was carried out using concentrated nitric acid. The samples were analysed for lead, iron, chromium, cadmium, zinc, nickel and arsenic using atomic absorption spectrophotometer (AAS). The results showed that 7 tap water and 1 well samples had low pH values ranging from 3.93 to 4.78, 1 tap water sample had pH 5.14, and 1 well water had pH of 7.23 but with high turbidity of 23.40 (above recommended value of 10). Hardness values (430 and 455) in 2 tap water samples and 1 well water (380) exceeded the WHO recommended value (100). Some heavy metals were also higher than safe limits. Example, only 1 sample was low in iron 0.12 mL; while 7 samples ranged from 4.08 to 11.88 mg/L, highly exceeding WHO safe limits of 0.3 mg/L. Lead concentration (0.049 mg/L) in 1 location also exceeded the WHO limit of 0.01 mg/L. Chemical parameters like chloride, nitrate and phosphate also exceeded recommended levels.

Keywords: Flood, drinking water quality, physico-chemical parameters, heavy metals, Lagos lagoon

PLANT-BASED EXTRACT AS AN ALTERNATIVE SOURCE OF PROTEIN IN CATFISH (CLARIUS GARIEPINUS) PRODUCTION

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The effect of processed seed powder of walnut (juglansregia) was studied on growth performance, haematological parameters and reproductive indices on cat fish (clariasgariepinus). A total number of one hundred and fifty fingerlings were grouped into six(6) varying treatment of walnut processed meal powder substituted for fish meal for control group 0%, while other groups were treated with 5%,10%,15%, 20%,25% of the meal diets. The Clariasgariepinus of wt 10.17±0.22 were randomly distributed into plastic tanks with 10 fish per tank in Triplicate treatments and were fed twice daily at 8.00 hrs to 9.00 hrs and 17.00 hrs and 18.00 hrs for 10 weeks. At the end feeding trial, the growth and
haematological parameters were significantly increased (p < 0.05) as the percentage of walnut meal increased in the treatment groups. *Clariasgariepinus* substituted with 25% of walnut meal has the highest Specific Growth Rate (SGR) 0.90%/day and 1% of walnut had the lowest value. There was an increase in WBC, PCV and Lymphocytes. The result revealed that the supplement diet with processed seed powdered walnut improved gonadosomatic index and reproductive indices of male *clariasgariepinus* brood stocks. The serum enzymes Alanine Amino Transferase (ALT), Aspartate Amino Transferase (AST) and Alkaline Phosphate (ALP) in the fish with diet containing 5%, 10%, 15%, 20%, 25% were not significantly different (p > 0.05). The ALT, AST, and ALP value ranges from 11:30 to 13:20, 19:57 to 27:10 and 46:80 to 59:00. The best feed conversion and protein efficiency was achieved by the *Clariasgariepinus* substituted with 50% of walnut seed processed meal powdered. The fish fed with 25% walnut seed processed powdered meal performed efficiently and have no adverse effect on blood and serum enzymes and the plant has a potential fertility which can be exploited in fish fingerling production by hatchery operators.

**Keywords:** Walnut seed (*juglansregia*), catfish (*clariasgariepinus*), protein.

15/SCI/59

**SYNTHESIS, CHARACTERISATIONS AND APPLICATIONS OF COPPER NANOPARTICLES**

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In recent times, copper nanoparticles have found different applications due to their unique optical, catalytic, mechanical and electrical properties. Copper plays an important role in electronic circuits because of its excellent electrical conductivity. Copper nanoparticles have also been used as catalysts with high efficiency due to its high surface area. It is a good alternative for noble metals such as silver and gold as it is highly conductive and more economical.

In this research a novel green method was employed to synthesize copper nanoparticles using Moringa extract as capping agent and ascorbic acid as antioxidant by the reduction and precipitation of copper from copper sulphate solution. The synthesized nanoparticles were characterised by means of FTIR and UV spectroscopy. The IR spectra obtained indicated that the Moringa extract were adsorbed (capped) on the surface of the copper nanoparticles through the functional groups present. The copper nanoparticles exhibited blue luminescence under the UV light. The synthesised copper nanoparticles were further used as catalyst in organic syntheses.

**Keywords:** copper nanoparticles, Moringa extract, blue luminescence, green synthesis, nanocatalyst.
BACTERIOLOGICAL ASSESSMENT OF SACHET-PACKAGED WATER IN A NIGERIAN COMMUNITY
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ABSTRACT
This study was carried out to determine the bacteriological quality of sachet-packaged water being sold in Ota area comprising of four different locations (Ota, Ijoko, Sango and Iyana-Iyesi). Forty (40) sachet water samples sourced from twenty (20) different manufacturers representing five samples from each location were subjected to physical and bacteriological analyses using total viable count and multiple tube technique. The result showed that the physical parameters were within W.H.O limits for drinking water with temperature ranged from 27.0 - 28.6 and pH from 6.27 - 6.90. The total heterotrophic plate count ranged from $1.0 \times 10^1$ cfu/ml – $5.3 \times 10^2$ cfu/ml, while growth on three samples coded IY4O(B), SA5S(A) and IJ4D(A) plates were too numerous to count. Multiple tube technique was carried out to confirm the presence of coliform in the water samples, using the most probable number (MPN) table, the number of coliform present in the samples were detected. The study showed that out of 40 samples, 21(52.5%) and 28(70%) were contaminated with *Escherichia coli* and *Enterobacter* species respectively. In conclusion, some of the water samples were found to be in excellent condition and others in satisfactory conditions, efforts however should be made by the manufacturers to still improve on the quality of their products.

Keywords: Bacteriological, quality, sachet water, products, parameter

GC-MS ANALYSIS OF CRUDE EXTRACT OF OSCILLATORIABONNETTI AGHARDH (CYANOPHYTA) ISOLATED FROM CERATOPHYLLUMDEMERSUM L
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Blue-green algae (Cyanophyta) are potential sources of biologically active compounds with antiviral, antibacterial, antifungal, and anticancer activities. In view of this, bioactive compounds were obtained from the batch culture of blue-green alga *Oscillatoria bonneti* Aghardh crude extracts. The species was isolated from a three week batch culture of a large biomass of micro algae collected from AkuteOdo, Ogun River using Wright’s Cryptophyte (WC) medium. Pure culture was obtained by isolation and sub culturing of the species biomass. The bioactive compounds from the pure culture obtained were first extracted with the Soxhlet extractor using n-Hexane (Hot method). Further analysis was done using Gas Chromatography and Mass Spectrometer fitted with a HP-5MS (5% Helium) Column at 80°C temperature for four minutes increased at 10°C/minute to 240°C and held for 20 minutes. Bioactive compounds analysed were grouped into terpenes (hydrocarbons) and terpenoids (oxygenated compounds) with a minimum compound quality measurement ≥ 90. The hydrocarbons include Copaene (1.36%), α- Cubebene (1.36%), Caryophyllene
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(8.58%), α-Caryophyllene (7.23%) with quality of 98, 93, 99, and 96 respectively while some of the oxygenated compounds; Naphthalene, 1,2,3,4,4a,5,6,8a-Octahydro-4a,8-dimethyl (2.64%), Caryophyllene oxide (8.98%), 1H-Cycloprop[e] azulen-7-ol, decahydro-1,1,7-trimethyl-4-methylene (14.37%), and 7R,8R-8-Hydroxy-4-isopropylidene-7-methylbicyclo[5.3.1] undec-1-ene (2.60%), which had compound quality of 98, 92, 93, and 95 respectively. The isolated compounds are useful in the pharmaceutical industry because of their high anti-microbial and anti-inflammatory properties. This is the pioneer research on bioactive compounds in Oscillatoria species in Nigeria and the result revealed the potentials of Oscillatoria bonneti in pharmaceutical industries.

**Keywords:** Crude extract, Oscillatoria, Anti-microbial, Hydrocarbon Macrophytes.

15/SCI/62

LUMINESCENCE CARBON NANOPARTICLES FROM SOOT


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Carbon nanoparticles (CNPs) were extracted from kerosene; diesel and petrol soot using a medium containing a mixture of acetone and water. The CNPs showed green and blue luminescence under 365nm UV light and were further characterised using SEM, UV-visible spectroscopy and FT-IR. The UV-visible spectra of the CNPs showed absorption maxima corresponding to blue shift and also attributable to non-uniform distribution. The SEM indicated that the CNPs occurred in aggregate structure with average size estimated to be about 40 nm. The FT-IR showed the presence of pure carbon without evidence of any functionalisation.

**Keywords:** CNPs, Kerosene, Soot, SEM, Luminescence,

15/SCI/63

ADAPTATION TO FOODS BY MONA MONKEY (CERCOPITHECUS MONA) IN A FRAGMENTED URBAN HABITAT IN LAGOS, NIGERIA

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The Mona monkey is a wildlife in the University of Lagos that has persisted over the years despite the reduction in its habitat through deforestation and fragmentation. It, however, needs to obtain its food resources from the same habitat. Maps of the University of Lagos from that showed changes in the vegetation cover between 2000 to 2013, and records of habitat conversion were used to establish fragmentation of the its range. Its food types and...
categories were studied for a period of three years using visual observations of feeding habits and opportunistic collection of food remnant methods. Results show that 6033 m² of the Mona monkeys’ range was lost to infrastructural development in 2013 that fragmented the habitat around Faculty of Environmental Science. Different parts of 30 species of plant foods in 24 families were identified as the Mona monkeys’ foods, of which 40% were fruits. The wild foods, which were used exclusively by the Mona monkey, constituted only 33% of the diet, with the remaining 67% being provisioned, raided or scavenged. This high proportion of consuming non wild foods seems to be a foods and feeding adaptation that has helped the animal to survive in its nutritionally degraded habitat.

**Keywords:** Mona monkey, Habitat Fragmentation, Foods and feeding adaptation

15/SCI/64

**FOCUS ON D. K. OLUKOYA CENTRAL RESEARCH LABORATORY, UNILAG**

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The National University Commission (NUC) noted that in terms of quality and quantity, the research output of tertiary institutions in Nigeria was about the best in sub-Saharan Africa up to the late 1980s. The decline of research activities in Nigeria is a consequence of obsolete research facilities, especially in the Universities. Laboratories are not well-equipped and researchers battle the problem of inadequate and out-of-date equipment. Motivation to do research and send out good publications is therefore very low. When researchers travel out to present their publications at International conferences, they discover that the technique or instruments used for such publications are no longer acceptable. They end up either not delivering the work or at best bring it out as a poster presentation. Some younger researchers scout for laboratories abroad where they are accepted to carry out research along with international supervisors for a period of 3-6 months and write publications with the supervisors. This concept though it appears good, does not give the Nigerian Universities the much desired visibility and capacity development and also does not give the needed rating as a University of choice.

The University of Lagos acknowledge that the only way to pursue knowledge is through collaborative research and dissemination of results/outcomes and approached industries and Alumni for assistance. The outcome is the D. K. Olukoya Research Laboratory donated by the General Overseer of the Mountain of Fire and Miracles Church, Onike, Lagos to his Alma mata. The facility is a massive complex with three floors covering 1000sq metre located adjacent to the Faculty of Engineering complex on the main campus of the university at Akoka and commissioned in June 2014.

The laboratory’s primary mission is to augment research in chemical, biological and engineering disciplines at the University of Lagos by providing state-of-the-art research services to University’s faculty members and facilitate interdisciplinary research, promote educational training opportunities for undergraduates, graduate students and postdoctoral fellows, create corporate partnerships in research as well as pursue excellence and make the D. K. Olukoya Research Laboratory nationally and internationally known in scientific research in the chemical/ biological sciences and engineering by creating an outstanding track record of industrial research that will involve partnerships with industry from concept to commercialisation.
The major research facilities available include Gas Chromatograph-Mass Spectrometer (GC-MS), High Performance Liquid Chromatograph (HPLC) with UV, Diode array and Fluorescence detectors, Gas Chromatograph-Flame Ionisation Detector (GC-FID), Atomic Absorption Spectrophotometer (AAS), UV/Vis Spectrophotometers. Type of services rendered varies from laboratory testing and analysis of different types of samples, water, soil, materials, plants, foods, pharmaceuticals, professional advice through consultancy and customised training programmes in several areas of competencies to clients.

15/SCI/65

ANALYSES OF EXTRACTS FROM *CAPSICUM FRUITESCENS* AND THE HEALTH BENEFITS

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This study was carried out to evaluate the essential oils and chemical constituents of herbal plant- *Capsicum fruitescens* (Ata ijosin in Yoruba). As shown by the phytochemical and proximate analyses and GC/MS chromatogram the plant is useful in the management and possible treatment of male factor infertility and here, we investigate the chemical constituents and their effects which make them useful for the purpose.

The plant was authenticated at the Herbarium, Department of Botany, University of Lagos by Mr. O.O Oyebanji, A voucher specimen for *C. fruitescens* with reference number LUH 6237 deposited at the herbarium.

Phytochemical analysis showed that the plant contained tannins, phlobatanins, terpenoids, anthraquinone, flavonoids, phenols, steroids. Total antioxidant capacity (TAC) for *C. fruitescens* is 14.95mg/100g.

The proximate analyses for the following constituents; fat, protein, moisture, ash and crude fiber, carbohydrate and were performed. The tests indicated 62.47 in 100g/micro gram /ml of NO test, the DPPH (2,2-Diphenyl-1-Picrylhydrazyl) test for total antioxidants showed (C. *fruitescens*) contained 22.64micro gram in 25 micro gram per sample.

The GC-MS analysis was carried out with model GC7890A and MS 5975C with the capillary column size 30m × 250µm × 0.25µm film thickness packed with HP-5MS 5% (phenyl methyl siloxane) using helium as the carrier gas at a flow rate of 1ml/min. The mass spectrometer (MS) was fitted with chem.-station software for control of the program and processing of the data. The extracts were diluted with the hexane prior to the injection into the Gas chromatography.

From GC-MS analysis of *C. fruitescens* it was observed some of the constituents present in the essential oil are -Naphthalene, 3-Buten-2-one-, and Dodecenol among others. Other compounds present are tetradecanoic, pentadecanoic, hexadecanoic acids and eugenol.

Eugenol- a local antiseptic and anaesthetic, Pentadecane- a metabolite, Tricosene- a sex pheromone, docosene an antimicrobial. The other constituents present in *C. fruitescens* are 3-Buten-2-one has antioxidant and antiseptic property, good to treat infections. (Huang et al, 2010), 8-Dodecenol an antimicrobial and a pheromone (Dai-Hua Hu et al., 2012), 13-Octadecenal an anti-infective agent in natural medicine for the treatment of infectious diseases. It is also used as pheromone, tetradecanal; is used as a sex pheromone to promote mating.
Tetradecanoic, pentadecanoic acid has antimicrobial, antifungal, anti-inflammatory and anti-viral properties. The presence of these constituents may support the use of the plant as an agent of improving fertility that may be caused by microorganisms.

*Keywords*: GC/MS chromatogram, antioxidant, microorganisms, anti-inflammatory, sex pheromone.

15/SCI/66

**PHYTOCONSTITUENTS INVESTIGATIONS AND WOUND HEALING POTENTIALS OF THE LEAVES OF CROTON ZAMBESICUS (EUPHORBIACEAE) PLANT**

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**ABSTRACT**

**Background**: Traditionally, plants have been employed in many countries for the treatment of wounds and burns. They contain natural agents with immense potentials to induce healing and regeneration of the lost tissue by multiple mechanisms. *Croton zambesicus* plant has been used in traditional medicine for management and treatment of ailments such as wounds.

**Objective**: To investigate the phytochemical, nutritional and wound healing potential of leaves of *Croton zambesicus*, using standard methods.

**Materials and Methods**: Methanol crude extract and pulverized sample were employed for phytochemical, nutrient and mineral analysis. The in-vivo wound healing study was done using partitioned n-hexane, ethyl acetate, methanol crude extracts on four groups of rats. Wounds were inflicted on the rats using excision wound model. Three doses each of the partitioned extracts (50 mg/ml, 100 mg/ml and 200 mg/ml) were incorporated in Vaseline as base was employed in treating the induced wounds to determine their rate of healing.

**Results**: The result showed that the n-hexane extract of leaves of *C. zambesicus* accelerated the wound contraction to a great extent at a dose of 50 mg/ml. The nutritional analysis showed that *C. zambesicus* can be a good source of protein (39.80%), the inorganic content was revealed in total ash content of 14.80%. Phytochemical screening of the methanolic crude extract revealed the presence of alkaloids, terpene, saponins, quinones, anthraquinones, sterols and flavonoids. The mineral composition indicated the leaves of *C. zambesicus* as potential source of inorganic elements such as Calcium (19.84 mg/100g), Potassium (10.44 mg/100g), Iron (8.46 mg/100g), Magnesium (5.64 mg/100g) and Zinc (2.50 mg/100g).

**Conclusion**: The result of this study which demonstrated accelerated wound-healing activity of n-hexane extract of the leaves of *C. zambesicus*, established its traditional claim as wound healing plant. *Croton zambesicus*, could be a source of wound healing agent for drug discovery.

*Keywords*: *Croton zambesicus*, n-hexane extract, wound healing, phytochemical, nutrients
THE ELECTRONIC ABSORPTION SPECTRA AND IN-VITRO ANTIBACTERIAL STUDY OF SOME ISONICOTINOHYDRAZIDE SCHIFF BASES

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ABSTRACT
A series of new heterocyclic Schiff bases was synthesised from isonicotinic acid hydrazide and pyrrole-2-carboxaldehyde (L1), furan-2-carboxaldehyde (L2) and thiophene-2-carboxaldehyde (L3). The compounds were characterized by elemental analysis, infrared (IR), and 1H and 13C nuclear magnetic resonance (NMR) spectroscopy. Their electronic absorption spectra were investigated in four organic solvents of different polarity. The absorption bands are assigned to the corresponding electronic transitions. In all the solvents, enolimines were predominantly present. The in vitro antibacterial activity of the compounds on Staphylococcus aureus ATCC 25923, Enterococcus feacalis ATCC 29212, Escherichia coli ATCC 25922 and Pseudomonas aeruginosa ATCC 27853 was studied using agar ditch method. The test compounds exhibited high activity against Gram +ve bacteria. The result indicate the possible use of the prepared derivatives for management and treatment of Gram +ve bacterial infections in order to overcome the resistance developed with existing antibacterial drugs.

Keywords: isonicotinohydrazide, Schiff bases, enolimines, In-vitro antibacterial activity.

GREEN SYNTHESIS OF ZnS NANOPARTICLES CAPPED WITH FRUIT EXTRACTS

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The use of non-toxic materials for the synthesis of nanoparticles has recently been of importance. ZnS nanoparticles were synthesised through a green route using fruits as capping agents. Different factors affecting nanoparticles were investigated. The prepared nanoparticles were characterised by UV-Vis Spectroscopy, Fourier Transform Infrared Spectroscopy (FTIR). The UV-Vis spectra of the samples obtained shows that the absorption peak exhibit blue shift from the bulk. The FTIR spectra confirm that the functional groups present in the fruits were involved and capping of the nanoparticles. The size of the particles was found to be in 1.81-2.68nm range. The particles showed luminescence under a UV lamp.

Keywords: ZnS, Nanoparticles, Paw-paw, Luminescence, Capping agents
BIOSYNTHESIS OF NANOSILVER USING MORINGA OLEIFERA AND ALLIUM CEPA BULBS AND THEIR ANTIMYCOBACTERIAL STUDY

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ABSTRACT

Aqueous extracts of Moringa oleifera and Allium cepa bulbs were utilised for biosynthesis of nanosilver using silver nitrate as precursor. The extracts performed the dual role as reducing and capping agents. The nanosilver was characterised using UV/visible Absorption Spectroscopy, Fourier Transforms Infrared Spectroscopy (FT-IR) and Scanning Electron Microscopy (SEM).

UV-Vis absorption maxima were at 430 nm for MO-AgNPs and 440 nm for AC-AgNPs. Similarly, FT-IR showed diagnostic peaks characteristic of functional groups associated with the biomolecular capping agents at 3329 cm⁻¹ (O-H), 1712 cm⁻¹, 1647 cm⁻¹ (C=O), 1264 cm⁻¹ (C-O), 1085 cm⁻¹ (C-N), 898 cm⁻¹ (C-H). Activity of the nanosilver were tested against Mycobacteria growth in vitro using Nitrate Reductase Assay (NRA) on 5 Mycobacteria isolates; ATCC 35882 strain, ATCC 25177 strain, Mycobacterium other than tuberculosis (MOTT), Mycobacterium fortuitum and Multi Drug Resistance M.tuberculosis (MDR-MTB). The highest Minimum Inhibitory Concentration (MIC) of 25 ppm was recorded for ATCC 25177 strain and the least activity of 6.25 ppm for MDR-MTB and MOTT using MO-AgNPs. All the Mycobacteria isolates were inhibited at 25 ppm using AC-AgNPs. This study presents the first reported activity against Mycobacteria by nitrate reductase assay method.

Keywords: Mycobacteria, Nanosilver, Biosynthesis, Nitrate reductase assay.

THE DETERMINATION OF VITAMIN A IN SOME FORTIFIED FOODS

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Vitamins are essential for in the body for growth, development, immune system maintenance and ensuring good vision. This study aims at validating some methods for vitamin A analyses, determine its concentration some fortified foods. Ultraviolet/Visible (UV/Vis) methods, a normal phase High pressure liquid Chromatographic (HPLC) method and a reverse phase HPLC method for vitamin A were compared and subsequently used to analyse samples of margarine, edible oil milk and milk drinks purchased from the Abule Egba and Oke Odo market in Lagos State. Two British Pharmacopeia (UV/Vis) methods were compared however; the British Pharmacopeia UV/Vis spectroscopic method that
involved extraction in n-Hexane was taken as the validated method. The reverse phase HPLC analyses gave poorly resolved peaks compared with the well resolved peaks in normal phase chromatography for vitamin A thus was used to compare with the results of the validated UV/Vis spectroscopic method. Vitamin A concentration for edible oil, milk, margarine, milk drink samples had values in the range of 74,060iu/kg to 81,166iu/kg and 90,445iu/kg to 1,779,648iu/kg, 73690 iu/kg to 80,100iu/kg and 22,350iu/kg to 47,490iu/kg, 218.0µg/100g to 430.0µg/100g and 147µg/100g to 673µg/100g in the validated UV/Vis method and normal phase HPLC respectively. The results were generally higher than their label claims and may have been due to overage added during manufacturing.

**Keyword:** Vitamin A, retinol, fortification, regulation, method development

15/SCI/71

A SURVEY OF MICROBIAL CONTAMINATION OF HAND SANITIZERS AND HAND WASHES

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**Abstract**

Hand sanitizers and hand washes have been widely used as germicidal agents in the reduction of the microbial load of hands in order to ensure good hygiene. Although, they are used against microorganisms, they are equally prone to microbial contamination. This study was carried out to assess the microbial contamination of hand sanitizers and hand washes purchased in Lagos metropolis. Thirteen samples were purchased from different pharmacies, supermarkets, local markets, and local hawkers in Lagos State. The samples were pre-enriched in Tryptone Soya Broth and Sabouraud Dextrose Broth. Isolation of bacteria and fungi were done by culturing on Tryptone Soya Agar, Mannitol Blood Agar, Centrimide Agar, MacConkey Agar and Sabouraud Dextrose Agar using the spread plate method. The bacterial isolates were identified by standard biochemical test, the use of Analytical Profile Index (API) kit and Microbact kit. The fungal isolates were identified by cultural and morphological characteristics. The antifungal and antibiotic sensitivity tests of the isolates were determined by the disk diffusion method, using thirteen commercially available antimicrobial agents. The bacterial overall contamination rate of 84.60% was observed, with population density ranging from 1.0 × 10³ cfu/ml to 5.0 × 10³ cfu/ml. The isolates identified were Acinetobacter baumanii, Corynebacterium argentoratense, and Paenibacillus macerans. All the isolates showed variable sensitivity to antibiotics with A. baumanii having the highest Multiple Antibiotics Resistance Index (MAR) of 0.6 and C. argentoratense with the lowest MAR index of 0.1. The fungi isolated were Penicillium chrysogenum (30.76%), Chrysosporium tropicum (15.38%) and Alternaria solani (30.76%). Penicillium chrysogenum was resistant to all the antifungals used (Nystatin, Voricinazole and Fluconazole) While Alternaria solani was susceptible to Nystatin but resistant to Fluconazole. This study revealed the high level of bacterial contamination of sanitizers and hand washes including some potentially pathogenic organisms that could have serious medical consequences. Also, some fungi survived in some of the hand washes and hand sanitizers, although most are not known human pathogens, there resistance to most antifungals used
against them is a serious health concern as many people produced these antimicrobial agents during the Ebola outbreak.

**Keywords:** Sanitizers, hand washes, contamination, population density, antimicrobial susceptibility

15/SSC/01

**SPATIAL VARIATIONS IN WORKFORCE SEX RATIOS IN NIGERIA**

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This article is premised on the notion that a workforce sex ratio that is significantly skewed in favour of men is an indicator that a state is a major destination for male labour migrants. Nationally representative data from the 2006 census were analysed for the nation’s 36 states and the Federal Capital Territory (FCT) Abuja, using the goodness of fit test. The analysis shows that the FCT, Lagos, Kano, Rivers, Borno, Yobe, Gombe and Bayelsa states have significantly higher sex ratios than the national average of 99 males per 100 females. They are, therefore, major destination centres in the country. While data are not available on migratory flows within the country, the paper explored the possible migratory routes and discussed the implications of the findings. It recommends the provision of amenities in the rural areas to address the needs of rural dwellers who more often than not are women.

**Keywords:** Migrant, Nigeria, destination states, FCT Abuja, Lagos, Kano, Wadsworth

15/SSC/02

**EXPLORING THE PERCEPTIONS AND EXPERIENCES OF GAY PEOPLE IN NIGERIA: AN INTERPRETATIVE PHENOMENOLOGICAL ANALYSIS**

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Following the enactment of the 2013 Same Sex Prohibition bill into law, it is now illegal to practice homosexuality in Nigeria. With this development, a variety of scholars have come up with a number of papers in reaction to this law from largely the legal, ethical, cultural or spiritual perspective. Since homosexuality has now become an identity which is practiced by a people who have now become a minority, there has been very little from the psychological perspective especially how these homosexuals perceive or experience their state of sexual orientation in Nigeria. Consequently, this study sought to explore some of the experiences and perception of these people from a psychological perspective using Interpretative Phenomenological Analysis (IPA). The IPA which is a method in the qualitative research methodology was imperative in enabling the participants reveal how they made meaning of their personal experiences as homosexuals. Six participants were selected and interviewed extensively through a purposeful sampling strategy and analysis of transcript revealed the extent of the hope, fears and aspirations of homosexuals in terms
of their quality of life. They suggest that living as a homosexual in Nigeria is a very daunting experience and it makes life a little more difficult due to the fear of persecution and prosecution. Further implications and areas of further research suggested.

**Keywords:** Nigeria, Homosexuality, Perception, Experience, Interpretative Phenomenological Analysis, Qualitative Research Methodology

15/SSC/03

**ASSESSMENT OF ENVIRONMENTAL IMPLICATIONS OF FEEDSTOCK REMOVAL FOR CHARCOAL PRODUCTION IN IBARAPA REGION, OYO STATE**

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Charcoal production activities have been expanding in the major supply regions raising concerns about the sustainability of feedstock sources. With intense focus on the increasing levels of atmospheric carbon dioxide (CO₂) and the potential for global climate change, there is an urgent need to assess the feasibility of managing ecosystems to sequester and store carbon. The study assessed the environmental implications of production in Ibarapa region of Oyo state with emphasis on the major tree species used, the nature of their removals, and carbon loss from feedstock removal. Participatory rural appraisal techniques of Focus Group Discussion and structured interview/questionnaire were adopted. Results indicate that thirteen (13) tree species were majorly used for charcoal production in the area with preference based on quality of produce. Natural forests supplied the highest volume of feedstock for production with 31.78% and its significance was highest in Ibarapa North LGA due to proximity to Igangan Forest Reserve. About 10 t CO₂e is removed via feedstock used for every 2.5 tons of charcoal produced while about 139,084.8 t CO₂e was removed for the volume of charcoal transported out of the region. The estimated carbon trading value of carbon removed on 2.5 tons of charcoal produced (₦8,000) is less than that received on charcoal trade (₦12,500) There is therefore a need for more robust forest conservation incentives which focus on promoting alternative economic activities and efficient farming practices.

**Keywords:** Charcoal, Feedstock, Carbon loss.
VULNERABILITY OF PASTORAL LIVELIHOODS TO CLIMATE AND VEGETAL CHANGES IN Ogun-Oyo Region of Southwest Nigeria

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Climate and availability of pasture are two critical elements to the sustainability of pastoral livelihoods. It is generally believed that climate change with a concomitant decrease in forage increases grazing distance and the risk of conflicts between the pastoralists and other social actors. This study investigated the trend in rainfall and temperature as well as the response of the vegetation and associated vulnerability of pastoral livelihood vulnerability in the Ogun-Oyo region of southwest Nigeria. The results suggest there has been a progressive increase in rainfall from the decades 1980s to 2000s with evidence of strong recovery around 2002 to 2010. This was also accompanied by a progressive warming from the decades 1980s to the 2000s. There is a chance that the additional water need (for pasture growth and animal watering) created by higher temperatures may not have been met by the increase in rainfall due to high evaporation. At the seasonal scale, the results suggest that the dry season is getting drier and the wet season getting wetter. This strong oscillation signal in rainfall and its concomitant impact on grasses and forage growth suggests that climate change poses significant threat to, and exacerbate the vulnerability of, pastoral livelihoods with possibility of increased conflicts with other social actors. A holistic and integrated approach that addresses all season availability of pasture and water for animals will be required to address the increasing vulnerability of pastoral livelihoods and reduce conflicts in the region.

Keywords: Pastoral livelihoods, Climate, Vegetal changes, Vulnerability, Southwest Nigeria.

APPRAISAL OF CHARCOAL PRODUCTION DRIVERS IN IBARAPA REGION, OYO STATE, NIGERIA

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Decreasing oil supply and the attendant environmental challenges posed by its use have driven the search for more sustainable energy sources. Global concern on charcoal production is the concentration of informal production in small lots leading to massive tree clearing activities, which have implications for climate change. Wood supply systems are however complex and site specific. An adequate understanding of exploitation drivers is the basis for review of the sustainability of local systems. This study was aimed at evaluating the key drivers of charcoal supply from the rural areas of Ibarapa region and demand
drivers in urban areas around the region. To appraise this, data were collected through participatory rural appraisal techniques of Focus Group Discussion (FGD) and structured interview/questionnaire. In addition, personal and non-participant observations were used to gain understanding of production processes in the area. Results of the social survey indicated about 34,771.2 metric tons of the produce, evaluated at about ₦1.3 billion is transported out of the region annually. It also revealed that expanded income is the most significant supply side driver while alternative energy sourcing is the most significant demand side driver. Promotion of other alternative rural income sources and efficient production and utilisation technologies coupled with adequate export level monitoring is suggested.

Keywords: Renewable energy, Charcoal, Sustainability, Forest management, Climate change.

15/SSC/06

PARADIGM SHIFT IN PHYSICAL GEOGRAPHY RESEARCH STRATEGIES FOR NATIONAL TRANSFORMATION

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There is no doubt that geography as an academic discipline and an umbrella specialty for the Earth Sciences has encountered tremendous changes. These changes reflected in both theoretical and conceptual foundations particularly with the advancement of information technology, spatial sciences and location-based technologies. Physical geography, the better half of geography that deals with natural processes and their interrelationship with man includes specialities and disciplines such as Hydrology and Water Resources, Climatology, Biogeography, and Geomorphology, amongst several others. These disciplines form a single geographical unit with research focus on the emerging issues that affect the environment and the impact on humanity. As such, a paradigm shift in the scientific approach towards problem solving, having progressed from the descriptive and landform identification or phenomenal nomenclature to application of geospatial information technology to data mining, predictive modeling and dynamic simulation of environmental processes. These emerging approaches and applications have helped in both identification and analysis of environmental challenges or its prediction thereof. This article provides an overview and potential future direction of research in Physical Geography at the Department of Geography, University of Lagos. Various examples of completed and published researches conducted at the department using the emerging geospatial information technology were synthesised. The unit research agenda, direction, and strategies in contributing to the global environmental crises and national challenges and change transformation were presented. This current research approach using geospatial information technology in conducting research that proffers solution to burning national environmental challenges need additional supports and facility enhancements. There is the need for continuous participation by the University of Lagos in the ESRI Virtual Campus GIS.
15/SSC/07

DYNAMIC INTERACTIONS AMONG INFRASTRUCTURE DEVELOPMENT, UNEMPLOYMENT RATE AND POVERTY LEVEL IN NIGERIA (1980-2013)

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The study investigates the dynamic interaction among Infrastructure Development Unemployment and Poverty Level in Nigeria. The study examined the interactive effects among Infrastructure Development Unemployment and Poverty Level; and investigated the nature and direction of causality among Infrastructure Development Unemployment and Poverty Level in Nigeria. This was with the view to providing empirical evidence on the linkages among Infrastructure Development Unemployment and Poverty Level.

Secondary data were used in this study. Data on government capital expenditure as measure of government capital expenditure, unemployment rate and Real consumption expenditure per capita used in proxy poverty level were sourced from statistical Bulletin published by Central Bank of Nigeria (CBN) and the National Bureau of Statistic (NBS) Abuja. Vector autoregressive Model was conducted in determining the interaction effects among the three variables and Pair-Wise granger causality Test was conducted in determining the direction of causality among variables.

The empirical result showed that an attempt to reduce poverty brings about a reduction in unemployment rate in the country. Moreover, government expenditure on capital projects reduces the level of unemployment over time in Nigeria. More also, an attempt to reduce unemployment brings about reduction on poverty level while, poverty increases at an initial stage of increase in capital expenditure but reduces poverty level over time. The study also indicated that as unemployment rate increases the economic policies engaged by the government increases the capital expenditure of the government. There exists no causal relationship among the variables in Nigeria as revealed by the study.

Keywords: unemployment rate, poverty rate, real consumption expenditure per capita, road transport infrastructure and VAR.

15/SSC/08

AN ASSESSMENT OF A POVERTY ALLEVIATION PROJECT: A CASE STUDY OF THE COLD ROOM/SMOKERS FISH FACILITY IN ILAJE-BARIGA, LAGOS STATE

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Abstract

Given the trends in urbanisation and slum dwelling, improving the standard of living of slum dwellers is important for a nation’s development. Efforts have been made by government and other organisations (United Nations) to checkmate the poor conditions of slum dwellers; by so doing providing slum communities with crucial infrastructure to aid development. Ilaje (Shomolu LGA of Lagos state) is one of the few slums that benefited from
United Nations (UN) intervention. This study seeks to verify the economic importance of the intervention within this community. It presents detailed information about the UN’s intervention and evaluates the economic impact of such intervention by carrying out a field survey to determine the level of impact it has on the community. 108 completed questionnaires were returned and it was discovered that the residents were aware of the intervention but were of the view that the project did not have any impact on them. Applying the gamma in order to ascertain the connectivity of Ilaje, it was discovered that Ilaje is poorly connected as the Gama value is 0.22. A traffic count survey was also carried out in order to obtain the volume of vehicular movements in/out of Ilaje. The result shows the dominance of motorcycles on all the roads where traffic counts were carried out.

15/SSC/09

DOES ENVIRONMENTAL QUALITY MATTERS IN GROWTH CONSIDERATION IN NIGERIA?

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This study focused on the role foreign direct investment plays in the relationship between quality environment and economic growth in Nigeria from 1970 to 2013. The ordinary least squares technique was employed and the key variables include carbon emission, human capital, per capita income, FDI, trade openness, interest rate, inflation rate and the interaction term between environment and FDI. The result showed that all the variables are stationary at first difference and that long run relationship exists among them. It is observed that FDI ratio and environment negatively impact GDP over the period, but the interaction between FDI and environment positively impact economic growth. It is suggested that the actual effect of emission on economic growth in the presence of FDI is 67.4% and thus recommended that efforts should be made by policy makers to strike a balance between the quantity of emissions and the amount of economic growth that is suitable for the country since the decision to maintain green growth by developing countries is not an easy one to make.

Keywords: Environment; Economic Growth; Foreign Direct Investment; Nigeria.

15/SSC/10

MANUFACTURING SECTOR RESPONSES TO GOVERNMENT POLICIES IN NIGERIAN ECONOMY EXAMINATION OF NEOLIBERAL AND STRUCTURAL APPROACH

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The manufacturing sector has never lost its recognition as one of the principal components of industrial sector in Nigeria. The sector has been earmarked as an essential factor to fasten
economic growth and providing critical answers to unemployment and poverty reduction. However, the sector’s has performance below expectation for over 40 decades providing insignificant solution to economic growth. This study examines the impact of government policies on manufacturing sector with the aim of ascertaining the implication on the overall growth in Nigeria. Vector auto regression (VAR) is employed to capture the contemporaneous responses of manufacturing output to neoliberal and structural approaches to salvage the sector. It is found that manufacturing have positive responses to government expenditure, interest rate and economic openness. The study recommends proper implementation, monitoring and evaluation of government policies and programmes to enhance efficient manufacturing sector.

Introduction

Responses of manufacturing sector to industrial policies in Nigeria have been subject of debate since the past four decades. It became a critical issue in the 1980s when the import substitution industrialisation (ISI) policy failed to achieve the projected results. The export promotion policy that followed in the mid-1980s, liberalisation and deregulation policies in 1990s, and privatisation and commercialisation of the year 2000s provide meagre solutions. Recent trend in industrial plan dates back in year 2014 when the government launched the “Nigerian Industrial Revolution Plan (NIRP)”. “The NIRP is clearly recognition of the embarrassingly modest contribution of manufacturing less than 7 per cent to our (Nigeria) gross domestic product (GDP)”, (Boyo, 2014). However, for almost two years now, the NIRP and its counterpart project, the National Enterprise Development Programme (NEDEP) seems to have followed the same traits of undesirable outcome of industrial policy in Nigeria.

Industrial development, especially of the manufacturing sector, is a crucial component of goal of macroeconomic policy in Nigeria, (Agba, 2004). The importance of manufacturing sector, particularly the small-scale manufacturing firms, to economic growth cannot be overemphasised. The sector plays a catalytic role in a modern economy and has many dynamic benefits that are crucial for economic transformation such as employment generation and self-sufficiency and these have in many respects made the manufacturing sector a leading sector, (Loto, 2005). In the modern world, manufacturing sector is regarded as one of the benchmarks for measuring a nation’s economic efficiency, (Amakom, 2012); (Ibbih and Gaiya, 2013). Therefore, discussion on economic growth and development in any country may be incomplete without focusing on industrial policy as it relates to manufacturing sector.

A STUDY OF THE USE OF NON-MOTORISED TRANSPORT IN UNIVERSITY OF LAGOS, NIGERIA

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This study is tailored towards assessing the enhancement of Non-Motorised Transportation within the University of Lagos environment. From the survey carried out, it is observed that
there is much motorised form of movement and this has resulted to heavy traffic congestion especially during the peak hours which has led to loss of man hour. A total of over 1000 questionnaires were administered to respondents and more than 60% agree to use bike if the infrastructures are put in place. Having assessed the rate of bicycle usage which is seen to be very low and peoples’ perception to riding bicycle within the campus environment, it is therefore necessary to educate people on the need to use bicycle for short movements. This study proposes NMT as an alternative to using cabs especially for those who want to keep fit.

**Keywords:** NMT, Motorisation, Bicycle, Rack, Screen line, Traffic Count.

15/SSC/12

AN EVALUATION OF VEHICULAR TRAFFIC ACCIDENTS IN THE UNIVERSITY OF LAGOS

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The study focuses on the impact of drivers’ behaviors that leads to accident in the University of Lagos, Akoka. It looks at the trend in accident based on rate of the occurrences as well as the relationship that exist between accidents and traffic flow within the campus. The study discovered that accident rate within the campus over the space of 8 years was 3.8% which grew to 51% between 2013 and 2014. The study also found out that the outcome of accidents based on human factors (human behaviour, depression etc) stand at 79% among other factors. Major points of accident frequency were identified in which **new hall and its environs** (filling station, roundabout, new hall shopping complex) have the highest record of accident occurrence. This study therefore recommends that drivers within Unilag should be given proper orientation on road usage especially the rules guiding the right -of -way.

**Key words:** Accidents, Behaviour, Roundabout, Traffic, Congestion.

15/SSC/13

AN ASSESSMENT OF GOVERNMENT PROJECT AT ALLEVIATING POVERTY WITHIN A COASTAL URBAN-POOR COMMUNITY: CASE STUDY OF ILAJE

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Given the trends in urbanisation and slum dwelling, improving the standard of living of slum dwellers is important for a nation’s development. Efforts have been made by
government and other organisations (United Nations) to checkmate the poor conditions of slum dwellers; by so doing providing slum communities with crucial infrastructure to aid development.

Ilaje (Shomolu LGA of Lagos state) is one of the few slums that benefited from United Nations (UN) intervention. This report seeks to verify the economic importance of the intervention within this community. It present detailed situation of the UN’s intervention and then evaluates the economic impact of such intervention by carrying out a field survey to determine the level of impact it has on the community. The field survey, other method adopted was able to identify some short comings of the project provided. However, this report brought in light the short comings of the intervention, and provides suggestion for improvement.

**Keywords:** accessibility, cold-room, fish-smokers, interventions, slums

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**IS THERE ANY LINK BETWEEN DEMOCRACY AND ECONOMIC DEVELOPMENT IN NIGERIA?**

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With estimated population of over 150 million and been the world sixth largest producer of oil with greater economic potentials in all sectors, the larger population of the Nigeria is still poor as a result of bad governance and corruption among other economic challenges. The current democratic dispensation that started in 1999 suggested there would be instant outright economic development. But, Nigeria is still lagging behind among the committee of democratic nations in terms of development. Therefore, the nature of relationship between democracy and economic development in Nigeria like any other developing countries became an important issue in this debate. Hence, this study investigated the causal relationship between democracy and economic development from 1999 till date, using some key economic indicators including Revenue Generation, Unemployment Rate, Poverty Rate, Effective Healthcare, Gross Domestic Products (GDP) and Foreign Exchange Rate. The study argued that, though Nigeria has experienced sixteen years of uninterrupted democratic rule, available evidence revealed that, there is no clear direct link between democracy and economic development in Nigerian, as a result of this, the last sixteen years of democratic dispensation in the country might not have significantly improve development. Therefore, though the study recommends strict compliance to the principles of democracy, good governance can make meaningful addition in the long run. But, to promote good governance, sound anti-corruption policies must be put in place, while the legislative, judiciary and executive arms of government must be functional and alive to their responsibilities.

**Keywords:** Democracy, Economic Development, Democratic Dispensation, Good Governance and Anti-Corruption Policies.
AN ECONOMIC ANALYSIS OF THE CONSEQUENCES OF FALLING CRUDE OIL PRICES ON THE NIGERIAN ECONOMY

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The current slump in the crude oil prices which started in the second quarter of 2014 has been sending its waves across the globe with its attending consequences on the economies of the exporting countries that heavily depend on crude oil revenue as their major source of earnings. Nigerian economy is caught up in the web because crude oil is the mainstay of the economy of which major economic indicators have been negatively affected. Therefore, it is imperative to examine the causes of the falling of crude oil prices in the international such as availability of substitute to energy, oversupply of the crude oil, etc and the negative effects on the Nigerian economy like reduction of revenue to the government, inflation and so on, in order to chart a new course, as well as to put mechanism in place to cushion the negative impacts such as diversification of the Nigerian economy, massive investment in the domestic refineries and among others.

Keywords: Diversification, Mainstay, Crude oil, Consequence, Corruption, Transparency

GLOBAL CLIMATE CHANGE: RESPONSES AND CHALLENGES

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No doubt that the issue of Global climate change has been one of the greatest environmental problems whose effects cannot be denied in diverse countries and the world at large. The avert effect from this issue has led to several local, regional and international conferences which have culminated in several protocols, and international legal frameworks formulated (Ranging from The Rio Earth Summit, Kyoto Protocol, and Copenhagen Conference among others) to tackle this issue. Yet Global climate change remains a global concern and a major threat to human security. The study examines the responses to Global Climate Change and the factors limiting the effectiveness and efficiency of the response. This paper adopted the descriptive historical approach and relied solely on secondary sources for data collection. This paper found among others that there are gaps between policy formulation and policy implementation, the major debacle to the effectiveness of the policies is the proliferation of Multilateral Environment Agreement (MEA), overlapping interest between market and
Climate change will intensify the already adverse conditions of rainfed crop production in Africa. Considering the socio-economic and political contexts of climate change in sub-Saharan Africa, a central argument is that adaptations to climate change need to be resilient, that is, to have the ability to deal with stresses and disturbances as a result of change, while retaining the same basic structure and ways of functioning, the capacity for self-organisation, and the capacity to learn and adapt to change. Vision 20: 2020 sets out Nigeria’s ambition to become one of the World’s 20 largest economies by 2020. Climate change not only poses challenges to reaching this goal but also creates opportunities. The 2012 floods in Nigeria were an abrupt reminder of the vulnerability of communities and infrastructure to natural disasters. What the future has in store for is more erratic weather, and with it, the risk of more frequent and more severe extreme events. This paper provides an overview of the likely impacts of climate change on sectors that are strategic for the growth of Nigeria’s economy, such as agriculture, livestock, and water resource management. It alerts us that increases in temperature, coupled with changes in precipitation patterns and hydrological regimes, can only exacerbate existing vulnerabilities. The paper also highlights the fact that there are promising opportunities to build resilience into the fabric of Nigeria's economy. Nigeria can start exploring those opportunities by focusing efforts where they matter the most: for example, in agriculture, which contributes about 40 percent of GDP, and employs more than half of the workforce. The transformation agenda provides a strategic platform to raise the sector’s productivity, attract private sector investment, and reduce excessive dependence on food imports.