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WELCOME REMARKS BY CONGRESS CHAIR, REV. SR. PROFESSOR EVANGELINE T. OPARAOCHA, PHD

History is gradually being made in FUTO, by the sustenance of this Annual Congress on Health Sciences and Technology by the School of Health Technology. Days roll by, months fly off and are gone, years do the same, but tough persons, minds, ideas and products supersede times and seasons. In fact, like the word of God, they live forever, as long as the earth subsists.

The Congress witnessing the fourth in the series today, presents a golden opportunity for participants, particularly the hosting School to showcase their research findings in all aspects of health, and with the prime aim of influencing the Health Sector and allied industries. Last year accepted abstracts were published in a US-based Journal, the International Journal of Translational Medical Research and Public Health (IJTMRPH). The whole world is reading and reacting to our research works. We are doing the same this year and are proud to add that we are making some progress with abstracts coming from outside the university and the country.

This year's theme, '*Innovative Technologies for Health Management: Sustainable Tool for Reliable Health Care System,*' is apt as a topical issue for deliberation in a gathering of this nature. Top on the list of problems associated with our crumbling health care system is poor managerial ability, displayed at all levels of the system. The health of the public deserves to be accorded a primal position as it is a major player in the development of any nation. Thus, there is need to re-orientate all sectors connected with healthcare management and delivery in Nigeria, so as to reposition them to face the 21st Century health challenges. This underscores the import of this Congress; to open a conversation that will bring a better health management system in Nigeria and Africa as a whole.

In addition to calling on the our government to take the bull by the horn, the contributions of the general public, especially the non-governmental organizations and donor agencies to help in the realization of this dream can never be overemphasized. Such assistance should include sponsorship of congresses of this nature. For example, this Congress had survived on meagre contributions from few participants and the magnanimity of the Vice-Chancellor of the Federal University of Technology, Owerri, Nigeria, Prof. Chukwuemeka Francis Eze. All efforts made to attract financial help from within the zone, the country and even beyond was elusive.

However, for this year, we are very grateful to Dr. Moeti Mathidiso Rebecca, the WHO Regional Director for Africa, who allowed her office to co-sponsor the Congress. It was a very big relief for us. All that has to do with paper work, advertisements, Book of Abstracts, publications and Congress bags were absorbed by the WHO Regional Office for Africa. Ma, your generosity will continue to inspire us to move to loftier heights in spite of challenges. We are calling on other stakeholders, donor agencies, government and non-governmental organizations, philanthropists, multinational companies and in fact highly-spirited individuals who desire a better health for the citizenry to stand up and identify with this project which is aimed at making Nigeria a better place.

As I come to the end of my address, I thank you for finding time to be here. Enjoy the hospitality of FUTO. There is always something new to learn, and I promise you, we will provide you with that today. I wish you a happy deliberation!

ABSTRACT 01
PRELIMINARY STUDY OF THE MOSQUITO REPELLENT AND ADULTICIDAL EFFECTS OF VOLATILE OILS OF LEMON GRASS (*CYMBOPOGON WINTERIANUS*) IN IMO STATE, SOUTHEAST NIGERIA

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Background: Lemon grass (*Cymbopogon winteriatus*) has been widely acclaimed to possess therapeutic, cosmetic and insecticidal properties. This study was conducted using a field controlled trial by human volunteers to confirm the effectiveness and applicability of locally-produced Lemon grass oil as a mosquito repellent and adulticidal agent for the prevention of mosquito-borne diseases in Nigeria.

Methods: Volatile oil was extracted using petroleum ether as solvent while olive oil was used as the oil base. The study was conducted between September and October 2017 and made use of 12 volunteers across three locations. Three different formulations of lotion were applied on exposed body parts of the volunteers and they worked three shifts daily. The biting rate, percentage repellence complete protection time and whole night protection were measured and recorded.

Results: Topical application of each lotion reduced the biting rate of mosquitoes across the three locations, with the 60% formulation ($^{v}/_{v}$) exhibiting higher impact of 341 vs 32; 438 vs 44 and 388 vs 33. The 60% ($^{v}/_{v}$) formulation also had the highest percentage repellence of 91.92% at location I, offered a whole night protection against mosquito in location I and O and offered a Complete Protection Time (CPT) of 21.6, 18.93 and 20.8 respectively across all three locations. There was a significant statistical association $r=0.95$ ($p<0.05$) between concentrations of the lemon grass oil formulations and mean duration protection time against mosquitoes. All formulations exhibited adulticidal activities, with the 60% ($^{v}/_{v}$) formulation having higher impact, causing fast immobilization or paralyzing effect on some mosquitoes that were at close range to a treated volunteer's body.

Conclusion and Implications for Translation: The study concludes that volatile oils of Lemon grass possess mosquito (*A. gambiae* and *A. funestus*) repellent and adulticidal effects, especially at higher concentrations (e.g., 60%) and can be used to reduce human-mosquito contacts and hence mosquito-borne diseases and irritation caused by their bites.

Key words: • Adulticidal • *Cymbopogon winterianus* • Formulation • Insecticidal • Lemon Grass • Mosquito • Repellent • Volatile Oil • Imo State

ABSTRACT 02
VIRAL LOAD SUPPRESSION AND ITS INFLUENCING FACTORS AMONG WOMEN ON HIV PMTCT INTERVENTION IN BENUE STATE, NIGERIA

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Background: Viral load suppression is key to achieving prevention of mother to child transmission (PMTCT) of HIV infection. Globally, the number of women dying from AIDS-related causes during pregnancy or within 42 days after pregnancy is estimated to be 37 million. Nigeria has an estimated 3.1 million people living with HIV/AIDS, with annual HIV positive births of 56,681. An estimated 281,180 new HIV-infections were recorded annually comprised of 126, 260 adults, and 154, 920 children. Women constituted 57% of adults infected. In order to ameliorate these trends, PMTCT-interventions were intensified in areas with high-burden, aimed at achieving viral-load-suppression. To promote activities/behaviors influencing viral-load-suppression, it is important to understand factors affecting viral-load-suppression in low-income settings. This study investigated factors associated with HIV suppression among PMTCT-intervention patients.

Methods: This study was a hospital-based cohort study, using a three-stage random sampling technique. Two hundred and forty eight women on PMTCT-HIV-intervention in 7 primary health centers from 7 priority local government areas (LGAs) in Benue State, were recruited for the study and followed-up over 6 months. A pre-tested, interviewer-administered questionnaire was used to collect data on socio-demographics, adherence to HIV/AIDS care/treatment, disclosure of status, lifestyle/risk behaviors, HIV/AIDS support group membership, treatment beliefs and knowledge of antiretroviral (ARV) treatment. Blood samples were collected from each participant for viral load assay. Descriptive statistics, chi-square test and logistic regression were used for data analysis at a 5% level of significance.

Results: Two-hundred and forty-four women completed the study. Mean age of mothers was 29.7±5.6 years, 49.5% and 50.5% were pregnant and breastfeeding women respectively. Viral-load-suppression rate was 90.98%, while 9.02% were unsuppressed. Respectively, 65%, 30% and 5% had good, fair and poor ARVs medication adherence-levels. ARVs-adherence-level, disclosure-of-status, knowledge of ART treatment and support group membership were significant influencing factors at ($p<0.05$, OR=1.51; 95% CI=1.03, 2.22) ($p<0.05$, OR=1.72; CI=0.39, 0.91), ($p<0.05$, OR=2.21; CI=1.25, 2.46) and $p<0.05$, OR=1.63; CI=0.42, 0.94) level of significant.

Conclusion and Implications for Translation: Viral-load-suppression was strongly associated with disclosure of status, knowledge of ART treatment and support group membership and worsened with poor adherence level. There is a need to design an HIV/AIDS intervention program that promotes the factors listed above.

Key words: • Viral Suppression • HIV • Adherence • Antiretroviral • PMCTC • Nigeria

ABSTRACT 03
ACTIVE IDENTIFICATION AND MANAGEMENT OF GENDER BASED VIOLENCE (GBV): IMPROVING HEALTH FACILITIES RESPONSE TO GBV IN IMO STATE, SOUTH EAST NIGERIA

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Background: Violence between intimate partners is a global-health problem, that disproportionately affects women's health negatively. Gender based violence (GBV) has been identified as a significant driver of HIV/AIDS infections among women in sub-Sahara Africa, which includes Nigeria. Access to post-GBV services has been sub-optimal in health facilities in Imo State – a state with 4.4% prevalence of sexual violence and 13.4% of physical violence.

Methods: Seven (7) high volume facilities geographically spread across the three (3) senatorial zones in Imo State were purposefully identified. Seven (7) gender champions were identified, trained and mentored on active identification, management and reporting on GBV cases. Before the intervention, only 33 cases of GBV were identified and managed over a 5-month period.

Results: There was improvement in the number of GBV cases identified and managed within 4-months from 33 to 62 cases. In all, 95 cases of GBV were identified, 88/95 (92.6%) among women and (7.4%) in men. Sexual (59/95), physical (29/95) and emotional (7/95) violence were the forms of GBV identified. There was a remarkable difference in number of cases identified and post-GBV services provided between pre and post-intervention; HIV Testing (18), post-exposure-prophylaxis (3), psychosocial support (26), and (10) were referred for shelter or police/legal services.

Conclusion and Implications for Translation: Improvement in access to post-GBV services was observed. Active identification and management of GBV cases will expand access to the unmet post-GBV needs of victims.

Key words: • Gender-based-violence • Sexual-violence • Physical-violence • Access • Improvement • Intimate Partner Violence

ABSTRACT 04
THE EFFECTS OF THE PAUCITY OF MEDICAL EQUIPMENT MAINTENANCE MANPOWER: A CASE STUDY OF THE HEALTH CARE DELIVERY SYSTEMS, SOUTH-EASTERN NIGERIA

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Background: Every equipment has its own operational characteristics which it must possess or exhibit in the course of its use. A termination in the characteristics under working condition is considered as fault and this may be due to lack of proper maintenance. Medical equipment are designed for the diagnosis, monitoring or treatment of medical conditions. Such equipment, in their different types and uses, help medical workers to diagnose, monitor, mitigate, rehabilitate and seek the best remedies for specific medical conditions. Medical equipment are essential for safe and effective prevention, diagnosis, treatment and rehabilitation of illness and disease. The aim of this study was to identify the reasons for the paucity of medical equipment maintenance manpower in south-eastern Nigeria.

Methods: A total of 150 questionnaires were completed by health workers in 15 health facilities and diagnostic centers in the selected states of the South Eastern states, namely, Abia, Ebonyi, and Imo. Sixty one percent (61%) of the respondents were males while 39% were females; 40.7% were doctors, 23.3% were biomedical engineers/technicians, and 35% were medical laboratory scientists.

Results: The study showed that there is insufficient equipment maintenance manpower in the health facilities and medical laboratory centers of the south-eastern Nigeria. As 17.3% nurses on short course training, 20.6% electrical engineers, service and maintain the available medical equipment against 35.3% biomedical engineers/technicians as the study revealed.

Conclusion and Implications for Translation: The study showed that there is an inadequate supply of equipment maintenance manpower due to a myriad of reasons, incuding lack of effective training/re-training of young personnel, influx of obsolete equipment by donor agencies, difficulty in getting or sourcing spare parts, lack of support from the government, maintenance manuals written in foreign languages, poor practical training in biomedical engineering and technology (BMET) curricula, technological complexity of modern equipment, lack of motivation, poor enlightenment campaigns, etc.

Key words: • Medical Equipment • South Eastern • Nigeria • Maintenance • Manpower

ABSTRACT 05
BONE DEMINERALIZATION IN HOSPITALIZED ORTHOPEDIC PATIENTS ON CAST-MEDIATED IMMOBILIZATION IN IMO STATE

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Background: Cast-mediated immobilization technique is used in the management of bone fracture in orthopedic patients. Depending on the complexity of the fracture, this technique may persist for several months or years to prevent further complications, and enhance healing. This study was carried out to investigate the biochemical changes on skeletal system among hospitalized orthopedic patients on cast-mediated immobilization.

Methods: A total of 130 subjects participated in the study. Sixty five (65) subjects were hospitalized orthopedic patients (who suffered different kinds of bone fractures) on cast-mediated immobilization for more than 6 months, while the remaining 65 were apparently healthy adult subjects and were not in any form of immobilization (these were termed the control group). Serum levels of calcium, alkaline phosphatase, and inorganic phosphate of these subjects were analyzed spectrophotometrically.

Results: The mean calcium, inorganic phosphate, and alkaline phosphatase of the cast-mediated immobilized patients (experimental group) were 2.18±0.05mmol/l, 5.96±0.30mmol/l, and 41.60±1.66iu/l respectively, while the control group counterparts were 2.29±0.03mmol/l for calcium; 6.84±0.25mmol/l for inorganic phosphate; and 38.01±1.89iu/l for alkaline phosphatase. Both calcium and inorganic phosphate levels were reduced in the immobilized patients as compared to the control group, but reduction in inorganic phosphate was significant ($p \leq 0.05$). The mean alkaline phosphatase level was significantly higher ($p \leq 0.05$) in cast-mediated immobilized patients than that of the control group.

Conclusion and Implications for Translation: The alterations in levels of biochemical substances suggest that prolonged cast-mediated immobilization has pathological effects on the skeletal system. Though immobilized for a long period of time to enhance healing, such patients need some level of exercise to avoid breakdown of the skeletal system.

Key words: • Bone • Immobilization • Bone Minerals • Alkaline Phosphatase • Orthopedics

ABSTRACT 06
IMPACT OF DIFFERENT COOKING FUELS ON INDOOR AIR QUALITY IN NAZE OWERRI NORTH LGA OF IMO STATE, NIGERIA

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Background: This research was carried out to determine the impact of selected cooking fuels on indoor air quality within six villages of Naze community in Owerri North local government area (LGA), Imo State Nigeria.

Methods: A descriptive cross sectional method was employed. Ten houses were selected from each of the six villages in Naze community based on the type of cooking fuel used. A total of sixty houses were monitored for indoor air quality. The selected cooking fuels used for this study include kerosene, liquefied petroleum gas (LPG) and firewood. Particulate matter (PM_{10}) and gaseous pollutants (nitrogen dioxide, NO_2, carbon monoxide, CO and hydrogen sulphide, H_2S) were monitored before and after cooking in the kitchens and parlors of the selected houses using particulate monitor and Gas Emission Monitoring System (AMPRO 2000). The analysis was done using descriptive statistics and the results were displayed in tables and charts.

Results: The results obtained during the monitoring period indicated that the use of kerosene, LPG and firewood stimulated an increase in the ambient level of the monitored air pollutants. From the results, the levels of kerosene before cooking were 33% in kitchen and 42% in parlor of the houses. These were within the recommended standard of NO_2 (0.2mg/m^3). After cooking, the level of NO_2 for kitchen and parlor were above the recommended level for the 24 houses monitored. For CO, only 4% of the kitchens were above the recommended standard of 0.03mg/m_3 before cooking, but this increased to 25% after cooking. In the parlor, there was no detectable CO before and after cooking for all the 24 monitored houses. The detectable level of PM_{10} in the 24 houses monitored for kerosene showed that only 29% of the parlors did not have detectable PM_{10} before cooking, whereas the level in other houses before and after in the kitchens and parlor were above 0.05mg/m^3 approved limit.

Conclusion and Implications for Translation: Kerosene, liquefied petroleum gas and firewood used as cooking fuels as well as the nature of anthropogenic activities within the sixty houses monitored in the six villages of Naze community in Owerri North Imo State Nigeria contributed to the high level of indoor air pollutants.

Key words: • Cooking Fuels • Indoor Air Quality • Particulate Matter • Imo State • Nigeria

ABSTRACT 07
EXPERIMENTED ANTI-ANEMIC POTENTIAL OF *MONODORA MYRISTICA* AND *PIPER GUINEENSE* SEEDS EXTRACTS IN RATS

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Background: In any case when the count of the red blood cells of an individual is below acceptable range of value, such a person is said to be anemic. This is typically characterized by low level of hemoglobin in the blood. *Monodora myristica* and *Piper guineense* seeds are traditional spices used in south-eastern Nigeria for most food preparations. This study investigates the anti-anemic properties of these two traditional spices.

Methods: The samples of *Monodora myristica* and *Piper guineense* seeds were ground to fine particles using an electric blender to ensure increase in the large surface area of samples. The finely ground samples were analyzed for various essential elements including iron, calcium and others using the method of AOAC (1990). Digestion by the micro Kjeldahl method in order to access the various protein components in the samples was also carried out. Soxhlet extraction method was used to extract the various components of the samples. Fifty five (55) rats divided into three groups were orally administered with the extract of the samples for 21 days. The revised recommendations for the measurement of serum iron (ICSH, 1990) was adopted for this experiment. The data were analyzed with SPSS version 18.0.

Results: At $p<0.05$, *Monodora myristica* was found to possess 25.04±0.07mg/g of iron which is significantly higher than that of *Piper guineense*, while *Piper guineense* was found to be an excellent source of calcium 24.137±0.184mg/g and other important minerals including zinc, magnesium, potassium. The anemic rats group fed with the combination of samples showed significant improvement of iron levels in their serum.

Conclusion and Implications for Translation: The results from this investigation provides further clarification on why these seeds are used, particularly as major soup ingredients or spices for nursing mothers, and other local recipes generally consumed in the south-eastern part of Nigeria.

Key words: • Anemia • Iron • Calcium • *Monodora myristica* and *Piper guineense* seeds

ABSTRACT 08
PREVALENCE AND GENDER DISTRIBUTION OF SPINAL CURVATURE ABNORMALITIES AMONG PEOPLE IN OWERRI, IMO STATE NIGERIA

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Background: Spinal curvature abnormalities are abnormalities of the formation, alignment or shape in the vertebral column. The spinal column consists of 33 vertebrae; 7 cervical vertebrae, 12 thoracic vertebrae, 5 lumbar vertebrae at the lower back, 5 sacral and 4 coccygeal vertebrae. It supports the body's weight, provides stability, flexibility of motion and protects the spinal cord. There are various types of spinal deformities such as scoliosis, kyphosis and lordosis. This study investigates the prevalence and gender distribution of scoliosis, kyphosis and lordosis.

Methods: This study covered the area of Owerri Municipal which is located in the Southeastern part of Nigeria. Clinical data were collected at various hospitals around the area namely Christiana Specialist Hospital and Royal Prosthetics and Orthotics Clinic. Information on patient's age, gender and their various spinal disorders were collected, coded and analyzed descriptively. A total number of 120 spinal cases were collected, out of which 94 were analyzed.

Results: Patients with scoliosis had the highest number of 74 (78.8%), followed by kyphosis 13 (13.8%) and then lordosis, 7 (7.4%). Of those with scoliosis, 33 (44.59%) were males while 41 (55.4%) were females. Children (43.24%) and teenagers (39.19%) were more affected than adults (17.57%). A total of 13 (13.82%) patients had kyphosis, out of whom 8 (8.5%) persons were females and 3 (3.19%) persons were males. Teenagers (46.15%) had greater occurrence of kyphosis than children (30.76%) and adults (23.07%). Among patients with lordosis, there were more females than males. Age distribution showed that spinal deformities, in general, were present more in adolescents than in adults. The main causes of these spinal deformities were idiopathic. The age of onset was between 10-15 years accounting for up to 80% diagnosed.

Conclusion and Implications for Translation: In this study, spinal deformities (scoliosis, kyphosis and lordosis) have increased across the years. Major causes are idiopathic and congenital. These observed changes across the years revealed by hospital records may be attributed to lack of health awareness and late detection of spinal deformities.

Key words: • Scoliosis • Kyphosis • Lordosis • Spinal Deformities • Owerri • Nigeria

ABSTRACT 09
ASSESSMENT OF THE MICROBIAL CONTENTS ASSOCIATED WITH *OGIRI,* FERMENTED LOCAL SPICE SOLD IN OWERRI WEST LOCAL GOVERNMENT AREA OF IMO STATE, SOUTH EASTERN NIGERIA

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Background: The use of the locally prepared spice and additive *Ogiri* is mostly used to improve the flavor and aroma of cooked food. Some people, after the consumption of food prepared with *ogiri*, have reported diarrhea, fever, stomach cramps, and softened stool, hence the need to assess the microorganisms involved in this fermented local spice.

Methods: The study examined the microbiological quality of fermented local *ogiri* sold at Nkwoukwu market, Ihiagwa, Owerri-West, L.G.A, Imo State. A total of 20 samples were randomly purchased from 20 different sellers in the market. Standard microbiological methods were adopted in the determination of the microbial quality of the samples.

Results: Total viable bacterial count recorded ranged from $2.6x10^6$ cfu/g to $1.12x10^7$ cfu/g, Total coliform count recorded ranged from $6.0x10^5$ to $1.2x10^6$ cfu/g, Total *Salmonella-Shigella* count recorded ranged from $1.0x10^5$ cfu/g to $1.2x10^6$ cfu/g, Total fungal count recorded ranged from $4.0x10^5$ cfu/g to $8.0x10^5$ cfu/g, Bacterial isolates recorded were, *Bacillus* species (19.8%), *Pseudomonas* species (7.9%), *Pediococcus* species (12.9%), *Salmonella* species (6.9%), *Corynebacterim* species (6.9%), *Proteus* species (7.9%), *Leuconostoc*species (12.9%), and *Lactobacillus* species (8.9%). Fungal isolates recorded were, *Mucor* species (26.7%), *Penicillium* species (26.7%), *Saccharomyces* species (30.0%) and *Candida* species (16.6%). Antibiogram of bacterial isolates recorded zones of inhibition ranging from 18 mm to 32 mm. Similarly, for the fungal isolates, Ketonazole and nystatin recorded zones of inhibition from 18 mm to 26 mm.

Conclusion and Implications for Translation: There is a need to educate the producers and sellers of this food additive on the need to ensure hygienic conditions during production and to educate them on the effect of time on the product. So they can produce little quantity that can finish on time so as to avoid food-borne infection.

Key words: • Assessment • Microbial Contents • Ogiri • Imo State • Nigeria

ABSTRACT 10
MICROBIAL QUALITY AND PUBLIC HEALTH IMPACT OF HAWKED BUSH MEAT SOLD IN OWERRI MUNICIPAL IMO STATE, NIGERIA

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Background: The issue of food hygiene covers a broad area including the selection and handling of raw foodstuffs, and personal hygiene of food, especially meat. Every food can cause illness if it is contaminated with harmful microorganisms. Meat has long been known for its high nutrient composition; it is an excellent source of protein and, hence, is consumed by many people worldwide. The aim of this study was to ascertain the microbial quality and public health impact of hawked bush meat sold in Owerri Municipal Imo State, Nigeria.

Methods: Samples of smoked bush meat were purchased from nine hawkers and transported to the laboratory using sterile plastic bags. Five (5 g) of each sample were accurately weighed on an electric scale. The bush meat samples were aseptically chopped into pieces with sterile surgical knife and the chopped bush meat samples were then inoculated into a nutrient broth for 24 hours to enable fastidious organism growth. After 24 hours, the broths containing the bush meat were sub-cultured into agars, and then inoculated and subjected to gram-staining and biochemical analysis.

Results: The statistical analysis showed that there was no significant difference ($P>0.05$) among the selected bush meat species and unhygienic prepared meats.

Conclusion and Implications for Translation: It could be concluded that when the preservative and hygienic procedures are not properly carried out, microbial activity increases which cause the deterioration of the bush meat. The large microbial count loads in this study may be attributed to the fact that there is no agency monitoring the handling and hygiene of the sales of bush meat sold at various markets in the city of Owerri.

Key words: • Microbial • Quality • Public Health • Bush Meat • Owerri

ABSTRACT 11
SCREENING OF *CNIDOSCOLUS ACONITIFOLIUS* AND *MORINGA OLEIFERA* LEAF ALKALOIDS FOR ANTIMALARIAL POTENTIALS

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Background: Malaria is a disease of global importance that results in 300-600 million cases annually with an estimated 2.2 billion people at risk of being infected (Singh *et al.,* 2010). The World Health Organization's (WHO) Malaria Report (2011) indicates that about 106 countries are at risk of transmission of malaria in the world. Nigeria bears the world's greatest malaria burden with approximately 51 million cases and 207,000 deaths reported annually (approximately 30 % of the total malaria burden in Africa), while 97 % of the total population (approximately 173 million) is at risk of infection (WHO, 2014). Artemisinin, a plant-derived compound, is combined with other compounds to provide the current most effective rapidly acting antimalarial treatment against multi-drug resistant strains. Discovering and developing novel antimalarial agents is one of the greatest challenges facing malaria control today (Gemma, 2010). This study was aimed at identifying the bioactive alkaloid contents of *Cnidoscolus aconitifolius* (Chaya) and *Moringa oleifera* (Moringa) leaves and to compare their anti-malarial effects in *Plasmodium berghei* infected albino rats.

Methods: Fresh *Cnidoscolus aconitifolius* and *Moringa oleifera* leaves obtained from Owerri, Nigeria were used. Kumar and Bhardwaj (2012) crude extraction method was used to isolate the alkaloids. GC-MS was used to separate and identify the alkaloid compounds. Seven Groups of albino rats (90-175g) were used: Group 1 (negative control), Groups 2-5 (Test groups), Group 6 (Standard Control) and Group 7 (normal control). After acclimatizing the animals, 0.2ml of *Plasmodium berghei* was administered intraperitoneally while 200 & 400mg/kg b.w. of the alkaloid extracts were administered orally. Percentage parasitemia and chemo-suppressive effects were obtained for analysis.

Results: *Moringa oleifera* alkaloid (2- Chloro-11H-Pyrido (3",2"-4,5) Pyrrolo (3,2-c) quinoline, 3.90%) exhibited higher antimalarial activity compared to *Cnidoscolus aconitifolius* (quinoline, 1.36%).

Conclusion and Implication for Translation: The isolated alkaloid extracts from locally available Chaya and Moringa leaves were found to have comparable antimalarial potential that could be useful in developing newer multi-drug resistant antimalarial therapies, like Artemisinin Combination Therapy (ACT). This was basically how Artemisinin was derived from Chinese traditional medicine. Further research is needed to understand these bioactive alkaloids before their clinical trials.

Key words: • Antimalarial • Alkaloids • Malaria • Artemisinin • *Cnidoscolus aconitifolius* • *Moringa oleifera*

ABSTRACT 12
LOCAL FABRICATION OF DENTAL SURVEYOR AND ITS PREFERENCE TO IMPORTED ONES

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Background: The construction of prosthodontic restorations requires the use of a dental surveyor to locate and detect wanted or unwanted undercuts. This instrument becomes necessary in order to determine possible path of insertion and withdrawal prior to partial or complete denture construction. Usually, this instrument is produced overseas and is imported at high cost thereby preventing undergraduate students and practitioners from access to its use. This results in difficulties in the effective design and fabrication of dental appliances in the laboratory. Meanwhile, every dental student learns to use a surveyor as a student in dental school and should continue to use one in practice if he or she is constructing removable partial dentures (RPDs), complete dentures and fixed partial dentures (FPDs). In order to respond to this need, the originality of the metals used, the soldered joint, the smoothness, movable parts, and the functionality of each part of the imported surveyor were examined. The purpose of this study was to design and fabricate a dental surveyor as a local alternative to the imported equivalent.

Methods: A quasi-experimental design was adopted in which fabrication of dental surveyor equipment using locally sourced materials was the main focus. The metals used for the fabrication were sourced and obtained in Shagamu, Lagos State and Ijebu Ode in Ogun State, Southwest Nigeria. In order to substantiate the objectives of this work, a product assessment form was designed and given to 9 respondents (Engineers) to assess the locally manufactured dental surveyor.

Results: The results showed that the rigidity of the local source materials was good, the joining of the components was normal with smooth and shining surfaces. The movable parts were also good for model/cast diagnosis.

Conclusion and Implication for Translation: Dental surveyors can be locally fabricated in Nigeria and their effectiveness can be compared to imported versions. Further studies are needed to validate the utility of the local surveyor as compared to its imported counterparts.

Key words: • Local Fabrication • Dental Surveyor • Model Surveying • Stainless Steel • Prosthodontic Restorations

ABSTRACT 13
COMPUTER VISION SYNDROME IN A DIGITALIZED WORLD

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Background: The digital world depicts the virtual environment constructed and developed through computers, enhanced by the internet, and allows processing and storing of digitalized data. It includes the availability and use of digital tools to communicate on the internet, digital devices, smart devices and other technologies. Digital device usage has increased substantially in recent years across all age groups, so that extensive daily use for both social and professional purposes is now the norm. These technologies when over-used are associated with negative effects, including Computer Vision Syndrome, also known as Digital Eye Strain. Computer Vision Syndrome (CVS) is the general term used to describe a variety of vision related symptoms that may be aggravated by regular use of a computer for two or more hours a day. Symptoms fall into two main categories: those linked to accommodative orbinocular vision stress including strain, ache, headache behind the eyes; and external symptoms linked to dry eye which include burning, irritation, tearing and dryness. Although symptoms are typically transient, they may be frequent and persistent, and have an economic impact when vocational computer users are affected.

Methods: Relevant published literature on CVS in the past decade was reviewed using different search methods.

Results: The 2016 Digital Eye Strain report identified an overall self-reported symptom prevalence of 65%, with females more commonly affected than males (69% and 60% respectively). CVS was reported more frequently by individuals who used two or more devices simultaneously, compared with those using just one device at a time.

Conclusion and Implication for Translation: The following are noted to reduce the risk of developing CVS: eye exercises, computer ergonomics, such as the screen distance of 16-30 inches from the eyes, adjusting the height of the desk or chair so that the middle of the computer screen is about 20 degrees below eye level, minimizing glare, use of computer glasses, and effective short breaks. Computers, smart phones and all other technology have transformed our world beyond what was thought to be possible. There is a need to balance their use in our normal daily lives.

Key words: • Computer Vision Syndrome • Digital World • 2016 Digital Eye Strain Report • Computer Ergonomics

ABSTRACT 14
SERUM PROTEIN STATUS AND ELECTROLYTE PROFILE OF HIV/AIDS PATIENTS ON HAART IN THE UNIVERSITY OF PORTHARCOURT TEACHING HOSPITAL, RIVERS STATE, NIGERIA

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Background: Despite successes achieved due to the wide availability and improvement of combination antiretroviral therapy regimens, there are still serious complications common in HIV patients on Highly Active Antiretroviral Therapy (HAART). This study evaluated the serum protein status and electrolyte profile of HIV/AIDS patients on HAART at the University of Port Harcourt Teaching Hospital (UPTH).

Methods: The electrolytes were determined by colorimetric method, while total protein and albumin (A) concentrations were determined by spectrophotometric method, and globulin (G) and A/G ratio were determined by calculation.

Results: The results obtained indicated a significantly higher total protein level ($p<0.05$) in male HIV patients on HAART when compared to male non-HIV patients. For albumin, the results indicated a significantly lower value ($p<0.05$) in female and male HIV patients on HAART (2.38 ± 0.22 and 3.27 ± 0.22 g/dl respectively) when compared to the control. The A/G ratio in male and female HIV patients on HAART was also significantly lower (0.54 ± 0.09 and 0.69 ± 0.09 g/dl) compared to the control. From the results, a significantly lower value ($p<0.05$) in concentration of sodium of female and male HIV patients on HAART (132 ± 5.20 mmol/L and 136.12 ± 4.85 mmol/L respectively) when compared to the control was found. For bicarbonate, the result indicated a significantly lower value ($p<0.05$) in female HIV patients on HAART (23.24 ± 2.20mmol/L).

Conclusion and Implications for Translation: Though the levels of most of the parameters analyzed were found within the normal ranges, serum protein and electrolyte monitoring in patients with HIV is recommended once HAART treatment is commenced.

Key words: • Serum protein • Electrolyte • HIV/AIDS • HAART • Nigeria

ABSTRACT 15
Local FABRICATION OF A MODIFIED DENTAL CROWN FLASK AND CLAMP (PORTEX FLASK) FOR DENTAL TECHNOLOGY

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Background: This research involved local fabrication of a modified dental crown flask and clamp that improved on foreign-manufactured versions. The work was carried out at the foundry and machine shop in Centre for Industrial Studies workshop II in Federal University of Technology, Owerri, between August and October, 2018. The aim was to produce a modified dental crown flask and clamp using metallic materials that will be more affordable to users.

Methods: This study adopted a quasi-experimental design in which the flask and clamp were designed and fabricated using aluminum, mild steel and copper. An imported flask/clamp served as the control. In other to substantiate the objective of this work, aluminum was used for the base of the clamp, copper pipes were used for the two rods, screws were made of mild steel, and top brackets were fabricated using copper.

Results: The results showed that metallic substances can easily be sourced for the fabrication of most instruments in dental technology. The instrument under study was fabricated within the university community. The fabricated instrument was used to further fabricate an acrylic jacket crown, which proved its viability for the intended purpose.

Conclusion and Implications for Translation: Local production of this product will render it more affordable and available.

Key words: • Alloy • Design • Instrument • Metal • Metallurgy • Raw Materials • Dental Care • Oral Health

ABSTRACT 16
NEURONAL TRACING APPLICATION IN BRAIN TUMOUR THERAPY

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Background: Glioblastoma, the most frequently occurring cancerous brain tumor, exhibits an incomparable invasive, destructive effects on localized brain tissue, making surgical resection practically impossible. The objective of the study was to evaluate the infiltrative capacity of a fluorescent lipophilic dil dye through the defensive glioblastoma tumor environment withint prefrontal cortex of a rodent. Extensively used due to its high photostability, dil-labelling acts by lipid bilayer permeation and also, displays a dual anterograde and retrograde tracing capability.

Methods: Six 4.0% PFA-fixed mouse brains were obtained from female NOD/SCID mice of weight range 20–25g. Before the procurement of the brain tissue, a xenograft of U87 glioblastoma cell line was induced at +1.00 mm bregma, 2.00 mm lateral and 3.00 mm from cortical surface in vivo, followed by a survival time of 20 days. Singular 0.2 µl microinjections of dil dye ethanolic solution were made directly on the pre-sectioned coronal surface with target at the site of the glioblastoma induction. At injection flow rate of 0.1µl/min, the vertical orientation of the needle was aligned to 0.50 mm coronal depth. After dye-permeation time of ten days, a 30.0% sucrose solution cryoprotection was done prior to cryostat sectioning initialized at -23°C. DAPI nuclear counter stain was applied to the subsequent 60µm coronal sections obtained before fluorescence imaging.

Results: Outcomes showed intense dil-labelling detected on the periphery of dark patches of the tumor which featured characteristic pseudo palisading necrosis – a distinctive feature of glioblastoma. Overlapping DAPI staining aided the visibility of the cell nucleic trail along tumor borders. Interestingly, retrograde labeling was seen in distant sites from the tumor, at the lateral hypothal area.

Conclusion and Implication for Translation: In contribution to research, this study supports dil-assisted delivery of cytotoxic formulations, efficacy assessment of recent glioblastoma treatment approach and successive optical demarcation of glioblastoma through fluorescent microscopy.

Key words: • Brain Tumor • Therapy • Neuronal Tracing • Glioblastoma • Dil-labelling

ABSTRACT 17
CONTRIBUTIONS OF MORPHOLOGY, ROUGHNESS, ADHESION, ELASTICITY AND CONFORMATIONS OF BACTERIAL SURFACE BIOPOLYMERS TO THE MEANS BY WHICH *E. COLI* PERSISTER CELLS RESIST AMPICILLIN

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Background: Persister bacterial cells are great at surviving the effects of antibiotics. Phenotypic means by which they persist are underexplored, hence this study.

Methods: Atomic force microscope (AFM) was used to quantify the outer membrane surface properties of multi-drug resistant (MDR)-Escherichia colistrains (A5 and A9) in the presence of ampicillin at minimum inhibitory concentration (MIC) and at 20×MIC. The properties quantified were bacterial surface biopolymers' thickness and grafting density, adhesion, morphology, roughness, and elasticity.

Results: Our results indicated that the MDR-E. Coli cells of strain A5 resisted ampicillin at MIC as well as at 20×MIC by decreasing their size and going through dormancy. The cells of strain A9 resisted ampicillin at MIC through elongation, increased surface area, and increased adhesion. Elongation allows cells to acquire resistant genes from neighboring cells and helps them in developing biofilms. The persister cells of A9 that were exposed to 20×MIC resisted ampicillin through increased roughness, grafting densities, and elasticities and through decreased surface areas.

Conclusion and Implications for Translation: These changes appear to minimize the persister cells' interactions with ampicillin allowing them to conserve their energy and become impermeable to ampicillin. Mechanistic insights into the bacterial surface interactions with antibiotics will potentially guide the design of new effective antibiotics against infections caused by persister cells.

Key words: • Adhesion • AFM • Antibiotics • Biopolymers • *E. coli* • Elasticity • Multidrug-resistance (MDR) • Persister cells • Morphology • Roughness

ABSTRACT 18
ANTIFUNGAL ACTIVITIES OF *COCOS NUCIFERA* VIRGIN COCONUT OIL

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Background: The emergence of antimicrobial resistance, coupled with the availability of fewer antifungal agents with fungicidal actions, prompted this study. The aim was to determine the effectiveness of virgin coconut oil as an antifungal agent on three species: *Candida albicans, Aspergillus niger,* and *Mould species*.

Methods: Their susceptibilities to virgin coconut oil and Griseofulvin were studied by using the agar well diffusion technique.

Results: Candida albicans showed the highest susceptibility to coconut oil on the SDA plate, with a minimum inhibitory concentration (MIC) of 12.5mg/ml (1:8 dilution) in the broth. Griseofulvin had 100% susceptibility on the C. albicans plate, with MIC of 14.29mg/ml (1:7 dilutions) in the broth. Mould species showed high susceptibility (100%) to coconut oil on the Mould plate, with an MIC of 16.67mg/ml (1:6 dilution). Griseofulvin had an MIC of 14.29mg/ml on the Mould species. *Aspergillus niger* showed a high resistance to the virgin coconut oil both on the SDA plate and in the broth, while Griseofulvin showed activities on the *A. niger* plate with MIC of 20 mg/ml in the broth. It is noteworthy that coconut oil was active against species of Candida albicans at 12.50 mg/ml concentration compared to Griseofulvin.

Conclusion and Implications for Translation: If our results are confirmed, coconut oil may be a viable option for the treatment of fungal infections in view of emerging drug-resistant Candida species. Virgin coconut oil may also be used for the treatment of fungal infections like Candidiasis and to prevent the spoilage of food substances by Mould species.

Key words: • Antimcrobial • Fungi • Griseofulvin • Virgin Coconut Oil

ABSTRACT 19
TIGER NUT (*CYPERUSESCULENTUS*) AS AN ANTI-INFERTILITY AGENT AND A SYSTEMIC MODULATOR OF ANDROGEN-INDUCED PROSTATE HYPERPLASIA IN ADULT MALE WISTAR RATS

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Background: The anti-infertility and systemic modulatory effects of tiger nut in androgen-induced prostate hyperplasia were analyzed to augment the available information on the fertility boosting effect of the plant.

Methods: Albino Wistar rats were used in the experiment and were purchased from the animal house of Michael Okpara University of Agriculture, Umudike, Abia State, Nigeria. The tiger nuts were purchased from a local market in Amakohia, Owerri, Imo State, Nigeria. The animals were divided into six groups as follows; (1) normal control, (2) induction group, (3) induction+20% meal, (4) induction+40% meal, (5) normal+20% meal, and (6) normal+40% meal (10 rats per group).

Results: The induction of infertility resulted in the total knockout of follicular stimulating hormone (FSH) in the system, while the administration of the tiger nut meal on the rats did not show any significant effect at $p<0.05$. The same trend was also observed on the effect of the tiger nut meal on luteinizing hormone (LH) level. However, on the level of testosterone, it was observed that, following the initial decrease as a result of the induction of infertility, the tiger nut meal at a higher dose of administration, significantly increased the testosterone level to about 2.10±0.06 from 0.30±0.01 in the induced group. On prostatic specific antigen (PSA), the administration of the tiger nut meal showed positive trends in the amelioration of benign prostate hyperplasia significantly reducing the increased level of the PSA (a biomarker for prostate hyperplasia) from 11.40±0.56 in the induction group to as low as 2.05±0.10 in the treatment group (high dose) at $p<0.05$. As for semen analysis, tiger nut meal showed a significant effect at $p>0.05$ in increasing the parameters of consistency, motility, pH, sperm concentration, and sperm live proportion which, until now, were significantly decreased following the induction of infertility and prostate hyperplasia in the rats. The results showed that the administration of tiger nut significantly ($p<0.05$) ameliorated the abnormalities of sperm cells and, thus, restored the morphology of the sperm cells.

Conclusion and Implication for Translation: These findings indicate the anti-infertility effects of tiger nut as well as its systemic ability to modulate benign prostate hyperplasia.

Key words: • Tiger Nut • Infertility • Prostate Hyperplasia • PSA • Sperm Analysis

ABSTRACT 20
KNOWLEDGE, BELIEFS AND PRACTICES TOWARDS SEASONAL TRANSMISSION OF MALARIA IN EZIOBODO COMMUNITY IN OWERRI WEST LOCAL GOVERNMENT AREA OF IMO STATE, NIGERIA

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Background: The study investigated the knowledge, beliefs and practices towards seasonal transmission of malaria in Eziobodo Community in Owerri West Local Government Area of Imo State Nigeria.

Methods: This was a cross sectional study. A total of 385 participants (215 males and 170 females) were randomly recruited for thestudy from the community. Ages ranged from 20 years and above.

Results: The result indicated that all respondents (100%) knew about malaria, with family and friends being the major source of information. All respondents (100%) agreed suffering from malaria, while 89.1% knew the various preventive measures which included sleeping under insecticide-treated nets (43.4%) and environmental sanitation (36.0%). Most of the respondents (43.4%) attributed mosquito bites as the perceived causes of malaria. Up to 49.4% of respondents strongly agreed that malaria transmission was higher in the rainy season, while 13.0% strongly agreed that malaria transmission was higher in the dry season. Overall, 52.2% of respondents agreed to sleep under the bed nets in all seasons, while 93.8% of respondents believed that environmental sanitation was effective in malaria control. There was no statistically significant relationship between level of knowledge and seasonal transmission of malaria ($p>0.05$).

Conclusion and Implication for Translation: In view of the findings of this study, preventive measures against malaria must be taken seriously by people living in malaria-endemic communities in all seasons in order to reduce the burden of infection.

Key words: • Malaria • Seasonal Transmission • Mosquitoes • Bed-nets

ABSTRACT 21
NON-NUTRITIVE SUCKING HABITS PROMOTES ACUTE-DIARRHEA AMONG CHILDREN AGE 6 – 23 MONTHS IN SEMI-URBAN COMMUNITIES IN IBADAN, OYO STATE, NIGERIA

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Background: The use of non-nutritive sucking materials, such as a nipple-dummy, and children sucking on their fingers for comforting or quieting is habitual worldwide. This practice could pose health challenges to children, including shortened breastfeeding duration and acute-diarrhea in low-income settings where hygiene practices and provision of clean water are poor. It is important to understand how non-nutritive sucking habits contribute to childhood acute-diarrhea. Therefore, this study was designed to investigate the association between non-nutritive sucking and acute-diarrhea in children aged 6-23 months.

Methods: This study was community-based and cross-sectional in design. Using a three-stage random sampling technique, 12-communities were selected from 6 out of 12 geo-political wards and 427 mothers of children aged 6-23 months were interviewed using a standardized questionnaire. Data on socio-demographic characteristics of mother and child, child's diarrhea history and non-nutritive sucking habits were collected. Descriptive statistics, chi-square test and logistic-regression were used for data analysis at 5% level of significance.

Result: Mean age of mothers was 29.7±5.6 years, while the mean age of children was 13.9±5.3 months and 50.6% were males. Prevalence of non-nutritive sucking was 45.2%, and this involved use of fingers (31.1%), nipple dummy (12.6%), and both (1.4%). Fifty-five percent of all children in the study had history of acute-diarrhea. Diarrhea was more frequently reported in children who engaged in non-nutritive sucking (60.6%) than those who did not (50.4%); ($p<0.05$, OR = 1.51; 95% CI = 1.03, 2.22). Only 8.0% of mothers had good-hygiene practices.

Conclusion and Implication for Translation: Childhood acute-diarrhea was prevalent in the study and was, significantly linked with non-nutritive sucking habits and aggravated by poor-hygiene practices.

Key words: • Dummy • Finger-sucking • Acute-diarrhea • Pacifiers • Hygiene

ABSTRACT 22
PATTERNS OF HUMAN EXCRETA DISPOSAL AMONG INHABITANTS OF OGIDI ANAMBRA STATE, NIGERIA

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Background: Poor sanitation is responsible for one of the highest existing disease burdens worldwide. Diarrheal diseases are the most common sanitation-related diseases. Globally, about 1.7 million people die every year from diarrheal diseases, and 90% are children under five, mostly from developing countries. We investigated the patterns of human excreta disposal in Ogidi, a town in Anambra State of Nigeria.

Methods: We utilized a well-structured survey questionnaire and focus group discussion for data collection. To calculate our survey sample size, an estimated population of 10,000 households was utilized from 70,000 inhabitants of the area of study. Responses were received from 285 heads of households (142 females; 143 males). The survey data was analyzed using chi-square test with Statistical Package for Social Sciences, 12.0.

Results: The age range of the respondents shows that 41.4% (118) were 41-60 years, 41.1% (117) were 21-40 years, 10.5% (30) were over 60 years while 7% (20) were less than 21 years. The occupations of the respondents were business/trading 124 (43.5%), professionals 95 (33.3%), farming 25 (8.8%), and others which included unclassified occupations and unemployed respondents 41 (14.4%). In all, 186 of the respondents were married, 76 single, 17 widowed and 4 divorced. Similarly, 126 (44.2%) of the respondents attained a post-secondary education, 107 (37.5%) secondary education, 32 (11.2%) primary education and 20 (7%) had no education. Water closet systems used by 193 (67.7%) of respondents and pit toilet used by 67 (23.5%) were the predominant method of human excreta disposal. Very few households practiced open defecation 14 (4.9%), bucket toilet system 5 (1.8%), burning 1 (.4%), burying 3 (1.1%), and use of polythene bag 2 (.7%). There was an association between the type of toilet and the occupation [χ^2 (18) = 38.174, ρ<.05] and the educational level [χ^2 (18) = 42.145, ρ<.05] of household heads. Knowledge of toilet-related diseases was strongly associated with educational level [χ^2 (3) = 14.205, ρ<.05].

Conclusion and Implication for Translation: A good number of the toilets were found to be in unhygienic conditions. Defecation in chamber pots (Po) is a common practice for children less than five years old. We recommend that Environmental Health Officers resume compound inspection in the study area to improve human excreta defecation practices.

Key words: • Patterns • Toilet-related Diseases • Excreta • Disposal

ABSTRACT 23
THERAPEUTIC EFFECT OF ISOLATED FLAVONOID EXTRACT OF *MORINDA LUCIDA* ON HEPATITIS-INDUCED ALBINO RATS

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Background: Hepatitis B is well known to be involved in the pathogenesis of many liver diseases. Liver diseases account for more than 30% of the disease rate in the world. Synthetic supplements have proven to be less effective in the prevention of and cure of these diseases. Other drug alternatives are either rare or expensive. Thus, the search for a cheaper, relatively safe, and long lasting remedy has necessitated the need explore ethno medical remedies. This study evaluates the therapeutic effect of isolated flavonoid extract of *Morinda lucida* on hepatitis-induced albino rats.

Methods: Twenty five (25) male albino rats were used for this study. The animals were examined and acclimatized to laboratory conditions for 2 weeks. They were further divided into 5 groups of 5 animals each. The rats in group A (normal control) were neither induced nor treated throughout the period of the experiment. The rats in group B (negative control) contained the rats induced with hepatitis B virus but were not treated. Group C contained the animals induced with hepatitis B virus and treated with 200 mg/kg flavonoid fraction of *Morinda lucida.* Group D contained animals induced with hepatitis B virus and treated with 400 mg/kg flavonoid fraction of *Morinda lucida.* Finally, group E (standard control) contained animals induced with hepatitis B virus and were treated with 0.2 mg/kg of the standard drugs (Entecavir). Samples from 3 animals were collected from each group before induction and after induction, while samples from 5 animals were collected from each group after treatment; the experiment lasted for 21 days. The evaluation of the flavonoid extract in the rats was done by determining the alanine transaminase, aspartate transaminase, albumin, bilirubin, alkaline phosphatase, hemoglobin, packed cell volume, red blood cell count and white blood cell count.

Results: The methanolic extract of *Morinda lucida* was found to contain some bioactive compounds which include mequinol,3-methoxy-4-xinglphinol, diethylphthalate,3,7,11,15- tetramethyll 1-2 hexadecimal -1-ol, 1,3-heptadecyn-1-ol,ethanol,2-(9-octodecengloxy)-(c)-, nhexadecanoic Avis, 7,10-octadecadienoic acid methylester, squalene,6,9,12,15-docosatetraenoic acid methyl ester, phytol.

Conclusion and Implications for Translation: This study showed that the flavonoid extract of *Morinda lucida* leaves possess some chemical constituents which contribute to the medicinal activities of the plant. The administration of the standard drug and the different doses of the plant extract showed various effects on the parameters. Based on the results, we observed that the effect of the extract on the hepatitis induced albino rats is dose-dependent; that is, the higher the dose, the higher the effect on the parameters.

Key words: • Hepatitis • Flavonoid Extract • *Morinda lucida* and Albino Rats

ABSTRACT 24
PATHOLOGICAL CHARACTERISTICS OF CHEST DISEASES USING X-RAY DIAGNOSIS IN FEDERAL MEDICAL CENTRE, OWERRI: A TWO-YEAR STUDY

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Background: The diagnosis of diseases of internal organs has improved with time, and there have been several radical advancements in biochemical and radiological technologies. The aim of this study was to ascertain the types of common chest diseases, the relevant diagnostic importance of x-ray application in chest diseases, and to statistically evaluate and ascertain the effectiveness of the use of x-ray machines in the diagnosis of pathologic characteristics of chest disease conditions.

Methods: The study was retrospective in design. Popular DRX-1824B TOSHIBA x-ray machine with floor to ceiling tube was used in carrying out the diagnosis. SPSS and Microsoft Excel were used in carrying out the statistical analyses.

Results: X-ray diagnosis was carried out on 650 patients of Federal Medical Centre, Owerri, Imo State, south eastern Nigeria. Three hundred and thirty one (331) patients were male whose ages ranged from 1 year to 103 years (51%), while the female patients totaled 319 (49%) with ages from 1 year to 86 years. Age group 0-9 years showed highest incidence in male, giving frequency of 7.23% of those enrolled in the study. The highest incidence in female was for the 40-49 years age range, giving frequency of 10.15%. Incidences of diseases were found with all age groups and for both sexes. Hypertensive heart disease was the dominant chest disease diagnosed in both males and females (40.48% and 36.36% respectively). A total of seven chest diseases were diagnosed, of which hypertensive heart disease showed occurrence of 38.5%; pneumonia 15.4%; tuberculosis 12.6%; chronic obstructive pulmonary disease 3.4%; bronchitis 0.5%; aortic aneurysm 0.3%; and cardiac heart failure 0.3%. No clinical disease condition was observed in 29% of all patients whose signs and symptoms were indicative of chest pathology.

Conclusion and Implications for Translation: From the study, X-ray diagnosis is seen as a medium to verify if the signs and symptoms of pathological cases is true as some of the same pathological cases showed non-lesions. Hypertensive heart disease was shown to be the dominant chest disease.

Key words: • Pathology • Chest diseases • Hypertensive Heart Disease • Pneumonia • X-ray Diagnosis

ABSTRACT 25
DESIGN AND FABRICATION OF A DUAL-POWERED DIGITAL ULTRAVIOLET STERILIZER FOR NOSOCOMIAL INFECTION CONTROL

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Background: The high rate of morbidity and mortality in health care centers over the years has aroused interest in infection control. Sterilization of medical instruments plays a major role in preserving and saving human lives, especially in curbing the spread of nosocomial infections.

Purpose: This study was aimed at designing and fabricating a dual-powered digital ultraviolet (UV)-sterilizer using cost effective, readily available materials that are effective against nosocomial infections.

Method: The design was based on "use-centered and user-centered design." Through this technique, a UV-sterilizer with ease of communication with its user and effective in controlling nosocomial infection could be fabricated. Electronic components such as resistors, capacitors, voltage regulator, diode, transformer, UV bulb, LEDs and microcontroller were incorporated into the design specifications.

Results: On completion, flexibility and mobility were achieved as the UV-sterilizer was much smaller in size compared to conventional sterilizers of same capacity/volume ($0.15m^3$). Functionality tests were carried out using *E.coli* infected water and different hospital instruments such as forceps, at different sterilization times in the presence of a biological indicator. The indicator yielded no growth of bacteria in the water and instruments after 48 hours of incubation indicating that the *E.coli* was killed within the time of sterilization. There was 58.31% cost-effectiveness in comparison with conventional UV-sterilizers.

Conclusion: The digital UV-sterilizer has proven to be an efficient tool in controlling the spread of nosocomial infections. The digital UV-sterilizer does not require drying and as such saves time. The digital UV-sterilizer is cost effective and saves time when compared to the steam sterilizer and, as such, its use should be encouraged. With the simplicity in the design of this device, safety can be achieved at the most affordable cost, and with great efficiency.

Key words: • Design • Fabrication • UV-sterilizer • E.coli • Nosocomial Infection

ABSTRACT 26
DESIGN AND FABRICATION OF AN AUTOMATED STEAM STERILIZER WITH A MAINTENANCE TOOL COMPARTMENT

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Background: The control of pathogenic organisms is one of major problems confronting health care professionals. Similarly, lack of indigenous technology and unavailability of spare parts have contributed to the breakdown of the limited medical devices in the health care system in developing countries. The purpose of this study was to design and fabricate an automated steam sterilizer with a maintenance tool compartment.

Methods: The materials used for this study included: galvanized steel, heating elements, LCD display, micro controller, capacitor, diode, etc. The device was designed using proteus software and fabricated using prototyping methodology. An indicator tape was used in testing of the device using both unwrapped and wrapped instruments. The equipment compartment was such that it could contain basic tool box components for easy routine maintenance of the device.

Results: It was observed that the color of the heat-sensitive tape turned black during each of the sterilization processes indicating that device was functional and efficient.

Conclusion and Implications for Translation: This study provided a cost-effective means of applying automation in the sterilizing of hospital equipment and maintaining the steam sterilizer.

Key words: • Automated Seam Sterilizer • Maintenance • Tool Compartment

ABSTRACT 27
DERMAL REGENERATIVE POTENTIALS OF *CARICA PAPAYA* ON WISTER RATS

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Background: The problem of wound care is a global one, as it accounts for about five percent of the total mortality that occurs worldwide. In recent times, advancements in the understanding of dermal regeneration have forged significant pathways for biomedical innovations in the treatment and management of wounds. In this study, the regenerative potential of *Carica papaya* latex on the dermal region through animal models was determined.

Methods: The latex was obtained from unripe un-detached *Carica papaya* fruits. Fifty (50) female albino rats weighing 140-210 g were selected for the study. They were grouped into: negative control (group A), positive control (group B), experimental group (Group C). The negative control group were not dressed; those in the positive control group were dressed with cicatrin powder topically, and the experimental group were dressed with the crude *Carica papaya* latex. The pathological anatomy was carried out on each group.

Results: The negative control group showed inflammatory cells infiltration, oedematous trauma of the muscle and massive formation of keratin cells which is the natural healing process. The rats in the positive control showed epidermal and dermal reactions to the cicatrin powder applied to them with healing by second intention. The experimental group which was dressed with *Carica papaya* showed reduced inflammatory cells, well organized stroma, thus healing by first intention.

Conclusion and Implications for Translation: This study showed that *Carica papaya* is a dermal regenerative potent phyto-agent.

Key words: • Dermal Regeneration • Carica Papaya • Wistar Rats

ABSTRACT 28
DESIGN AND FABRICATION OF AN ADJUSTABLE MILWAUKEE USING LOCALLY SOURCED MATERIALS FOR THE MANAGEMENT OF SCOLIOSIS

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Background: Over the years, the use of a removable spinal orthosis has proven to be the best technique for the management of scoliosis as compared to use of the Hippocratic method or the turnbuckle cast; these methods were quite crude and cumbersome. Production of a more efficient and less expensive means of correction and management of scoliosis through orthotic rehabilitation were the objectives of the current study. The aim was to design and fabricate an adjustable Milwaukee Cervico-Thoraco-Lumbo-Sacral Orthosis (CTLSO), by modifying the original design and utilizing locally sourced materials.

Methods: Autodesk Revit Software was used in reviewing the schematic designs of the device and also the cast of a patient was used to obtain the measurements for the device. The cast was transferred to the lamination jig were it was molded with EVA foam (ethylene vinyl acetate) under heat from an electric oven. Afterwards, adhesive was applied all over the EVA foam and plastic lamination with epoxy resin, fiber glass and stocknet was done. Affixing of the D-ring and Velcro strap and super structure were done after the device was taken out of the positive cast. The final product was tested on two patients for its ability to fit these and other patients of greater circumference and height, and also its ability to resist spinal column motions.

Results: The device fit the two patients optimally and was able to improve dynamic balance performance satisfactorily since it resisted spinal column motions.

Conclusion and Implication for Translation: This study showed that the fabricated device will provide a cost effective means for the management of scoliosis, if adopted in clinical practice.

Key words: • Adjustable Milwaukee • Locally-sourced • Management • Scoliois

ABSTRACT 29
DESIGN AND FABRICATION OF INFAN-THERM DEVICE FOR MONITORING OF BODY TEMPERATURE OF INFANTS

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Background: Fever is an inflammatory response of the body to a foreign body invasion or a symptom suggesting that an infant is probably under attack by one or more infectious diseases, such as urinary tract infection, blood bacterial infection, meningitis. etc. Fever can cause sudden death of infants (SDI) if not detected and medically attended on time. The objective of this study was to design and fabricate an infan-therm device that would continuously monitor infants, transmit information to medical personnel using radio frequency (RF) at the detection of high body temperature, and to test the efficiency of the fabricated device.

Methods: The materials used in this study were locally sources electronic components such as: transformer, power diodes, capacitors, LEDs, resistors, thermistor, zener diodes, LM324C operational amplifier, digital decoder IC, relays, transistors, seven segment displays, and crystal oscillator. The infan-therm was designed using Computer Aided Design (CAD) software in two parts: (1) the base/transmitter part and (2) the receiver/output part. Data generated from the first part was transmitted out through radio frequency signal to a distant location.

Results: The fabricated device was tested for functionality and was proven effective.

Conclusion and Implication for Translation: This device will meet the need for continuous monitoring of infants in order to keep them safe at all times.

Key words: • Fever • Infant • Thermo-device • Inflammatory Response

ABSTRACT 30
INFLUENCE OF PLOIDY ON THE FREQUENCY OF SURVIVORS IN *cdc13-1 exo1* MUTANTS UNDER UNPROTECTED TELOMERIC DNA

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Background: Telomeric DNA is found at the end of chromosomes where it plays a role in protecting the chromosome vis-à-vis the integrity of the genome of the organism. Telomerase is an enzyme that, coordinates activities leading to telomeric DNA maintenance and capping of the chromosomes. Uncapped telomeres confer no protection to the chromosomes, thus making the chromosomes vulnerable to degradation. The objective of the study was to illustrate the role of protein *CDC13* in telomere capping.

Methods: In this study, survivors were generated from haploid *cdc13-1*Exo1 mutants (DLY 1296, DLY 3181, DLY 3182 and DLY 2561) of *Saccharomyces cerevisiae* by exposing them to 36°C.

Results: The results showed that the frequency of survivors (sv) for the various strains ranged from $2.2x10^{-6}$ to $7.2x10^{-6}$. The haploid cells were crossed to generate diploids in combinations of 1296x3181 and 2561x3182. For the diploids, strain 1296 (sv large colony) crossed with strain 3181 (sv large colony) had a surviving frequency of $2.5x10^{-7}$ while strain 2561 (non-survivor) crossed with strain 3182 (sv) had a surviving frequency of $1.1x10^{-7}$.

Conclusion and Implications for Translation: Comparing the parents' (haploids) frequency of survivors to the frequency of survivors of the diploids, it could be hypothesized that diploids generate less survivors than haploids. This is consistent with the hypothesis that the mechanism of survivorship is not mutational, as diploids normally have higher frequencies of mutation than haploids.

Key words: • Telomere • Survivors • Diploids • DNA • CDC-13

ABSTRACT 31
RISK FACTORS FOR HYPOXIA AMONG VERTICALLY ACQUIRED HIV PATIENTS INITIATING CARE AT IMO SPECIALIST HOSPITAL, UMUGUMA, OWERRI, IMO STATE, NIGERIA

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Background: Vertically acquired human immunodeficiency virus (HIV) patients are prone to suffer from chronic dysfunctional states such as hypoxia, which is defined as low oxygen saturation in tissues. There is need to identify potential risk factors for hypoxia among vertically acquired HIV patients initiating care.

Methods: A hospital based retrospective study was conducted to determine those risk factors associated with this chronic state. All data samples of vertically acquired HIV patients receiving care at the Imo Specialist Hospital Umuguma in Owerri were collected for a five-year period from July 2013 to August 2018. Bivariate logistics regression model as well as multivariate logistic regression were used to determine the risk factors for hypoxia among the study participants.

Results: The rate of occurrence of hypoxia was relatively high among the studied group (42.4%). There was a suggestion that the presence of advanced HIV and a low $CD4^+$cell count (<200 cells/mm^3), as well as increased age were associated with a greater risk of hypoxia, in vertically acquired HIV patients. In this study, the most important risk factors of hypoxia included age and lower advanced HIV, $CD4^+$ <200 cells/mm^3, while lack of antiretroviral therapy (ART) posed another risk for the disease.

Conclusion and Implications for Translation: This work revealed that hypoxia among vertically acquired HIV patients was quite high and deserves adequate attention that can be addressed through the identification of important risk factors of the disease among this group of HIV patients.

Key words: • Vertically Acquired HIV • Hypoxia • Oxygen Saturation • CD4 Count