AS MEN OF HONOUR WE JOIN HANDS

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MEDICINE SECURITY IN AN UNSTABLE ECONOMY

BOOK OF ABSTRACTS 2022

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FOREWORD

The book of abstracts for the 95th Annual National Conference of the Pharmaceutical Society of Nigeria, 2021 contains a record 29 abstracts in the different fields of Pharmacy practice. In recognition of our promise to communicate evidence from all aspects of pharmacy and the pharmaceutical sciences, we are absolutely delighted to publish this book of abstracts, and Scientific posters at this conference in the TIN city. They reflect the profession's commitment to innovation in pharmacy and evidence-based practice to support the delivery of high-quality patient care especially in line with the theme of this year's conference which is Medicine security in an unstable economy; aptly highlighted by abstract PSNJOS002. From a focus on Building pharmaceutical services sustainability through workforce support development; Development and evaluation of polymeric oral gels of *khaya senegalensis* gum containing *garcinia kola* leaf and *citrus sinensis* peel extracts; to the evaluation of the memory enhancing activity of the dichloromethane fraction of the methanol extract of the stem bark of *Pycnanthus angolensis* in Scopolamine and Lipopolysaccharide models in mice; to the Impact of LMS in pharmacy education in some selected universities in southwestern Nigeria and contributing factors; All abstract provide a unique view of a culmination of research and practice with a view to strengthening Pharmaceutical health systems. This in turn will have a great impact on medicines availability and sustainability with the health care system.

The abstracts highlight the collaborative nature of pharmacy research and demonstrate a collective understanding of the value of shared knowledge in advancing practice, as shown in the researched titled "Antimicrobial Drug Prescription Patterns for Respiratory Tract Infections in Military Hospitals Lagos Nigeria. This research is birth from our program *"WETIN PHARMACIST DEY DO SEF"* which aims to increase pharmacist visibility in the hospital workspace. This is in tandem with the theme of this year's conference which is focused on Medicine security in an unstable economy, the knowledge of prescription patterns helps pharmacist advocate for rational drug use, thereby securing available medicines form developing resistance to prevailing microorganisms. More of such important collaborative and disruptive research interventions will be show cased soon.

We are very grateful to the members of the abstract subcommittee review panel, and to all the reviewers who have worked with the Nigerian Journal of Pharmacy. The commitment of their time and expertise to the abstract and manuscript review process has ensured prompt review of both full papers and conference abstracts. I encourage all delegates to interact with the abstract presenters either in person or via emails during the conference. I also congratulate all the award-winning abstracts.

Dr. Margaret O. ILOMUANYA *(BPharm. PhD, FCBR)*
Editor in Chief
Nigerian Journal of Pharmacy

ABTRACTS PRESENTATED AT THE 95TH ANNUAL NATIONAL CONFERENCE OF THE PHARMACEUTICAL SOCIETY OF NIGERIA 1ST -6TH NOVEMBER 2022 HELD IN JOS, PLATEAU STATE

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PSNJOS009	Chinwuba, E.P	Chinwuba, E.P; Abiodun, O; Iwalewa, E.O.	Identification of Phytochemical components of DCM fraction of the methanolic stem extract of P*ycnanthus angolensis* by gas chromatography-mass spectrometry (GC-MS).
PSNJOS010	Owolabi T.A	Tolulope A. Owolabi, Oladapo A. Adetunji	Characterization of carboxymethylated *Enterolobium cyclocarpum* gum and evaluation of its binding properties in ibuprofen tablet formulations

PSNJOS011	Ronari C.	Charles Ronari, Bunu J. Samuel, Orumwense O. Daniel	Assessment of malaria therapeutic outcomes in children under 12 years of age among three health facilities Bayelsa State
PSNJOS012	Udem N.D	Udem Ngozi Dorathy, Eze-Oduenyi Chinyelugo and Ogbonna Justin	Comparative Study of Physicochemical Properties of Metronidazole Infusion Marketed in Enugu State, Nigeria.
PSNJOS013	Eze-Oduenyi C.	Eze-Oduenyi Chinyere, Udem Ngozi Dorathy , Chukwura Uju	Evaluation of Normal Saline Infusion Quality Marketed In Enugu State
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PSNJOS015	Osahon P.T	Penaere T Osahon, Lisa A Mote, Veronica I Ntaji.	Assessment of the impact of medplan®, a medication reminder mobile application, in glaucoma patients in Benin City, Nigeria.
PSNJOS016	Omale S.	Omale Simeon, Brenner K. Shaun, Aguiyi J. Chinyere, and Gould W. Gwyn	Antidiabetic effects of *parinari curatellifolia* extract (PCE) in insulin resistant 3t3-l1 adipocytes
PSNJOS017	Ndugba A.C.,	Ndugba A.C., Adepoju-bello A.A., Oyawaluja B.O., Oluwasola M.A	Physical assessment and atomic absorption spectrophotometric analysis of cadmium and lead in twenty-five brands of ciprofloxacin tablets marketed in Lagos, Nigeria
PSNJOS018	Suleiman M. Y.	Suleiman Musa Y., and Halima Abubakar I.	A One Year Retrospective Study on Anti - hypertensive Consumption in NHIS Pharmacy at University of Abuja Teaching Hospital, Gwagwalada, Abuja
PSNJOS019	Ighorodje, A. E.	IGHORODJE, AUSTINE ESEJUVWEVBO	Building pharmaceutical services sustainability through workforce support development
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PSNJOS021	Baba Danjuma O.	Baba Danjuma Oyinaka, Nuhu Tanko, Benjamin Mari Aya	Assessment of knowledge and skills of community pharmacists in providing primary healthcare services: a case for integrating community pharmacies into Nigeria's health system space
PSNJOS022	David E.A	Emmanuel A. David, Rebecca O. Soremekun, Isaac O. Abah, Muhammed Y. Katagum , Adefolarin A. Amu, Roseline I. Aderemi-Williams	Trends of pharmacists-led diabetes care in Nigeria (2000-2022): A systematic review
PSNJOS023	Idoko C.C	Chioma C. Idoko, Paul O. Onah	Influence of demographic variables on the quality of life of hypertensive patients in a tertiary care facility in Benue state, Nigeria
PSNJOS024	Idoko C.C	Paul O. Onah, Chioma C. Idoko	Drug treatment of gestational hypertension; implications for maternal and fetal wellbeing
PSNJOS025	Haruna M.A	Mbaya A. Haruna, Nina S. Kute, Enemoyi S. Ifediora, Mbata A. Ugochukwu, Abiola E. Ayoola, Patrick I. Oliorah, Aniebiet E. Umoh, Chiamaka V. Okonkwo	Antimicrobial Drug Prescription Patterns for Respiratory Tract Infections in Military Hospitals Lagos Nigeria.

PSNJOS026	Elias O. Ezeh	Daniel O. Orumwense, Andrew Momo, Olusegun R. Bamgboye, Franklin C. Osuji, Okeroghene A. Timipre, Elias O. Ezeh, Henry P. Osain	Antimicrobial use pattern in Obstetrics and Gynaecological wards of a tertiary health institution in Yenagoa, Bayelsa State, Nigeria.
PSNJOS027	Edah A. O	Alexander O. Edah, Ephraim O. Abu, Ukpe Ajima , Patricia O.Odumosu.	Evaluation of the antidiabetic activity of the Ethanol Leaf extract of *Plectranthus neochilus* Jos-South Cultivars
PSNJOS028	Olugbake OA	Olugbake OA, Ayeni F.A, Phillips T. O	Adverse drug reactions associated with dolutegravir based regimens in first line HIV patients in a general hospital, Lagos, Nigeria
PSNJOS029	Aderemi-Williams R.I.	Aderemi-Williams R.I, Sanu H.M., David E.A., Aremu T.O. and Akanmu A.S.	Knowledge, attitude and adherence to tuberculosis preventive therapy by people living with HIV accessing care in large treatment site in Lagos, Nigeria: a cross sectional study

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PSNJOS001

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IMPACT OF LMS IN PHARMACY EDUCATION IN SOME SELECTED UNIVERSITIES IN SOUTHWESTERN NIGERIA AND CONTRIBUTING FACTORS

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Background: Technology has permeated all forms of human endeavour. The process of teaching and learning is not left out and technology is being introduced to facilitate the process (Curley *et al.*, 2018). A Learning management system (LMS) is a form of educational technology which has been successfully introduced in some educational settings (Alkoudmani and Elkalmi, 2015).

Objectives: The study aimed to assess the impact of LMS technology on Pharmacy education in schools that have implemented it among the selected universities.

Methods: A cross-sectional descriptive survey of 66 lecturers and 779 students drawn from four schools of pharmacy namely; Obafemi Awolowo University, University of Benin, Olabisi Onabanjo University and Igbinedion University. Primary data were obtained using two (2) set of pre-tested structured questionnaires, one each for lecturers and students. The items were made of simple statements on scales of agreement and importance with weighing scores of 0–4. The collected data were analysed using descriptive statistics such as frequencies, percentages, median, weighted averages and mean of weighted averages.

Results: Less than half of the lecturer- (25, 37.9%) and student-respondents (353, 45.3%) reported using LMS. The effects of LMS that were reported include improved educational outcomes (WA = 2.73 for lecturers and 2.25 for students), promotion of collaborative learning among students (WA = 2.65 for lecturers and 2.40 for students), and promotion of students' independent learning (WA = 3.00 for lecturers and 2.56 for students).

Conclusion: The study concluded that although LMS has great potential as a learning tool, its impacts are yet to be fully identified because its use is not yet widespread.

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Ensuring continuous Medicines availability in a public hospital in Nigeria

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Background: Out of stock syndrome is gradually charactering public hospitals in Nigeria. Ensuring continuous medicines availability in hospitals will reduce incidences of purchase of falsified and substandard medicines from the open drug market.

Objectives: This study evaluated factors responsible for out-of-stock syndrome in a public hospital, as well as recommendations to ensure continuous medicines availability.

Methods: These were achieved through use of pre-tested questionnaires administered to 60 pharmacists at Federal Medical Centre, Asaba in July, 2022. Questionnaire evaluated demographics of respondents, factors responsible for shortage of medicines in the hospital and recommendations on how to overcome the shortage. Data obtained were analyzed using SPSS Version 20. Descriptive and chi square statistics were obtained. P value of less than 0.05 was considered statistically significant.

Results: Of 60 questionnaires distributed, 58 were returned, giving a response rate of 96.7%. Nearly half (43.1%) were aged 21 to 29 years, females were (58.6%), half (48.3%) were married, a third (31.0%) were in practice for 1 to 5 years. Half (58.6%) were sole holders of Bachelor of Pharmacy Degree, a third (39.7%) were interns. Factors responsible for medicines shortage ranged from Drug Revolving Fund (DRF) was not being properly funded (P = 0.001), poor inventory management (P = 0.047), delay in supply from DRF stores (P = 0.001), lack of electronic management systems (P = 0.005), inadequate staffing (P = 0.005) poorly trained stores officers (P = 0.011), poor inventory management (P = 0.047). Recommendations to improve availability include: DRF should be properly funded (P = 0.048), public hospitals to begin producing medicines locally (P = 0.009), government should expedite action on take-off of National Drug Distribution Guidelines (P = 0.000). Purchase of generic products in line with Essential Medicines List, continuous training of staff, government should reduce tariff on imported pharmaceuticals, stocking of medicines to be in line with standard treatment guidelines, were not statistically significant. Majority (72.2%) agreed DRF remains best system of making medicines continuously available.

Conclusion: Factors responsible for medicines shortage were elucidated in this study, as well as recommendations to ensure continuous availability. Proper funding of DRF by hospital management is recommended. Hospitals should commence local production of essential medicines. Government should ensure speedy implementation of National Drug Distribution Guidelines to ensure reduction in availability of substandard medicines.

Key words: Continuous medicines availability public hospital

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Evaluation of the memory enhancing activity of the dichloromethane fraction of the methanol extract of the stem bark of *Pycnanthus angolensis* in Scopolamine and Lipopolysaccharide models in mice.

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Background: Numerous health benefits have been ascribed to the use of different parts of *Pycnanthus angolensis* (Welw) Warb., Myristicaceae, in ethnomedicine including its role in cognition enhancement and inflammation. This study was undertaken to investigate the stem bark of the plant for memory enhancing activity in mice.

Methods: The plant material was extracted by maceration with 80% methanol. This was subsequently fractionated using N-hexane, Dichloromethane (DCM), and Ethyl acetate. The Dichloromethane (DCM) fraction-the most potent fraction- (25, 50, and 100 mg/kg) was evaluated for memory enhancing activity using the Y maze, Morris Water Maze (MWM) and the Novel Object Recognition Test (NORT) , on the scopolamine and Lipopolysaccharide (LPS) induced amnesia model. The antioxidant markers and acetyl cholinesterase inhibiting effect of DCM were also evaluated.

Results: DCM significantly ($p<0.05$) increased the alternation behavior of the mice in the Y maze, increased the discrimination index in the NORT and decreased the escape latency in the MWM paradigm. Biochemically, DCM increased Glutathione (GSH), and superoxide dismutase (SOD), but decreased Malondialdehyde (MDA) and acetylcholinesterase (AChE) activity in the brain. The histopathological results revealed that the DCM protected against the decreased neuronal density induced by scopolamine and LPS.

Conclusion: DCM fraction may possess significant memory enhancing activity which could be through enhancing cholinergic action, combating inflammatory responses by reducing influence of LPS and increasing antioxidant status of the brain. DCM protected against the decreased neuronal density induced by scopolamine and LPS.

Keywords: Inflammatory response, *Pycnanthus angolensis,* neuronal density

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DEVELOPMENT AND EVALUATION OF POLYMERIC ORAL GELS OF *KHAYA SENEGALENSIS* GUM CONTAINING *GARCINIA KOLA* LEAF AND *CITRUS SINENSIS* PEEL EXTRACTS

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Background: Oral infections present as public health issue globally. The disease burden is fuelled by the increasing antimicrobial resistance to conventional therapeutics. Medicine security, self-sufficiency and local content inclusion in pharmaceuticals is expedient in West-African sub-region. Plants due to their constituent bioactives can be utilized as strategic alternatives to synthetic therapeutics. This study developed and evaluated oral gels containing extracts of *Garcinia kola* (Clusiaceae) and *Citrus sinensis* (Rutaceae) using *Khaya senegalensis* (Meliaceae) gum as the polymeric carrier system.

Methods: *Garcinia kola* leaves (GKL), *Citrus sinensis* peels (CSP) and *Khaya senegalensis* gum (KSG) were sourced, authenticated, and subjected to preformulation characterizations. The minimum inhibitory concentrations (MICs) of herbal extracts were determined against *Staphylococcus aureus* (*SA*) and *Pseudomonas aeruginosa* (*PA*) using the agar well diffusion method. Ciprofloxacin (CPZ) was used as control. The KSG carrier system was developed and optimized. The oral gels were developed by incorporating the respective effective herbal extracts concentrations into the optimized carrier system. The gels were evaluated for pH, viscosity, antimicrobial and stability in accordance with established methods. Results were analyzed statistically using one-way ANOVA and Student's t-test to identify differences between groups. Significance was set at $p \leq 0.05$

Results: The preformulation profiles of KSG, GKL and CSP have been established. The optimized carrier system contained KSG (15 % w/v). The MICs against SA and PA were: CPZ (20 mg/mL); GKL (400 mg/mL); CSP (400 mg/mL) and GKL+CSP (310 mg/mL). The SA zones of inhibitions by CPZ(6.00 ± 2.46 mm);GKL(4.80 ±1.00 mm);CSP(4.60 ±1.00 mm);GKL+ CSP(5.98± 1.12 mm), while for PA zones were CPZ (4.60 ± 1.02 mm); GKL(6.80 ± 1.03mm) ; CSP(7.67 ± 2.43 mm) and GKL+CSP(8.8 ± 0.12 mm). The polyherbal extract had better antimicrobial profile comparative to those containing single extracts.

Conclusion: KSG has demonstrable carrier system suitability for the herbal extracts. The developed herbal oral gels have been established with appreciable antimicrobial activities. Synergistic antimicrobial effect was observed with the polyherbal oral gel. The usefulness of these herbal gels in oral infections is suggested.

Keywords: *Khaya senegalensis, Garcinia kola, Citrus sinensis*, polyherbal oral gels, antimicrobial activity

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PHYSICOCHEMICAL AND RHEOLOGICAL CHARACTERIZATION OF NATIVE AND THERMALLY SILICIFIED BLENDS OF SWEET POTATO AND SORGHUM STARCH GRANULES

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Background/Objective: The aim of the study was to characterize native and thermally silicified blends of sweet potato and sorghum starch granules using their physicochemical and rheological properties

Methods: Sweet potato (*Ipomea batatas* L., Family: *Convolvulaceae*) and sorghum (*Sorghum bicolor*, Family: *Poaceae)* starches (PS and SS respectively) were extracted and silicified by dissolving 25%w/w silicon dioxide in ultra-pure water containing 75%w/w starch with continuous stirring at 42±0.5^{0}C for 4 mins and subsequently oven-dried (45±0.5^{0}C) to form sPS and sSS respectively. Physicochemical characterization of the granules was done using angle of repose, density measurements, Carr's index, Hausner's ratio, morphology, pH, swelling capacity and FTIR spectroscopy as assessment criteria.

Results: At all ratios, the native starch blends had higher bulk and tapped densities than the corresponding silicified starch blends. The Carr's index and Hauner's ratio ranked sPS:sSS(1:2) < sPS:sSS(2:1) < sPS:sSS(1:1) < PS:SS(1:1) < PS:SS(1:2) < PS:SS(2:1). The pH of the blends ranked 7.3[PS:SS(1:2)] > 7.1[PS:SS(1:1)] > 6.9[PS:SS(2:1)] > 6.8[sPS:sSS(1:1)] > 6.7[sPS:sSS(1:2)] > 6.4[sPS:sSS(2:1)]. The native starch blends showed higher swelling at 27.0±1.5^{0}C than the silicified starch blends with PS:SS(2:1) having the highest swelling capacity. The FTIR plots of the native starch blends showed prominent peaks that were retained in the silicified blends, however, new functional groups were added as a result of the silicification. Higher peak and breakdown viscosities were generally observed in PS and SS blends than the silicified blends.

Conclusion: The result shows that modification and co-blending of potatoe and sorghum starch granules led to improved functional properties of the native starch blends, with good potentials as excipients in dosage formulations.

Keywords: Sweet potato starch, sorghum starch, co-blending, thermal silicification, excipients

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Prevalence of Calcium Channel Blocker Induced Ankle Edema and its Treatment in a Cohort of Newly Diagnosed Hypertensive Patients

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Background: Hypertension is among the leading causes of morbidity and mortality among adult population worldwide. Hypertension among adults has been reported to range between 13 – 64% of adult population in Nigeria. Calcium channel blockers are widely prescribed either as monotherapies or in combination therapies in the management of hypertension and other cardiovascular disorders. One of the major challenges with this class of
drugs are their association with difficult to treat peripheral edema. There is limited literature evidence on the incidence and severity of CCB induced edema and the efficacy of management practices in developing countries. This study therefore aims to assess incidence and the common treatments.

Methods: A total of 193 eligible subjects were enrolled into an eight-week study and allocated into three treatment groups for each drug [Amlodipine 10mg or Nifedipine 20mg]. One group received no intervention, while the other two groups received either Bendrofluthiazide 5mg [BDF] or Lisinopril 5mg depending on blood pressure or other patient factors. Edema was monitored every two weeks throughout the study using standard tools. The data were analyzed using students t test, one way ANOVA and descriptive statistics as appropriate. P values ≤ 0.05 was considered statistically significant.

Results: The demographic data showed that males accounted for almost two thirds of subjects [62.3%]. Majority of subjects had no formal education [38.7%] and only about a quarter had tertiary level education [21.7%]. The major occupations were business [45.1%], farming {29.5%] and civil service [25.4%]. The mean age of participants was 54.5 ± 10.9 years. The overall incidence of edema was about 29% at the end of the study period. Lisinopril addition to therapy resulted in significant reduction in incidence and severity of edema as opposed to other interventions. This suggests that ACEIs have a positive role in minimizing incidence of peripheral edema.

Conclusion: It is important that health professionals recognize pedal edema as a potential adverse drug reaction among CCBs which can potentially complicate antihypertensive therapy for many patients. There should be active focus by pharmacists on identifying signs of edema during their routine pharmaceutical care interaction with patients. This will not only assist in early intervention, but also help reduce associated distress and provide information feedback to physicians and other care givers. Peripheral edema remains a complication factor in CCB therapy and ACEIs may be considered in management of edema induced by this class of drugs

Keywords: Hypertension, Calcium channel blockers, Pedal edema, Amlodipine, Nifedipine

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The Assessment of Telepharmacy Practice Among Community Pharmacists in Lagos, Nigeria

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Background: Telehealth is transmitting medical information and providing and supporting clinical care from one place to another through electronic communication methods. Telepharmacy is the provision of pharmaceutical care to patients using technologies and telecommunications. Telepharmacy allows the pharmacist to provide patient care services in an area by taking history, reviewing patients' files, and assessing medications utilized by the patients. This study is aimed to analyse the assessment of tele-pharmacy practice among community pharmacists in Lagos, Nigeria.

Methods: This was a cross-sectional descriptive survey of community pharmacists practising in Lagos, Nigeria. We used a convenient sampling technique in recruiting participants to the study. The questionnaire was developed and validated. The final questionnaire consisted of three sections. The first domain centered on the sociodemographic characteristics of the respondents while the second section probed for awareness and availability of telepharmacy services in community pharmacies in Lagos. The data collected were coded and abstracted into the Microsoft Excel Spreadsheet and thereafter transcribed into the Statistical Products and Services Solution (SPSS) version 23 for Windows for final analysis.

Results: From our results, 54(63%) of the total pharmacy providers who were randomly sampled for this pilot study were currently practicing telepharmacy services in Lagos state, 82(96.5%) of the total participants were aware and had the perception on the importance of telepharmacy practice in Nigeria. Also, 21(50.7%) of the telepharmacy providers started the practice within 1-5years hence buttressing the fact that there is a surge in telepharmacy growth from the COVID-19 era till present. From the results 43(50.6%) of the participants strongly agree that telepharmacy practice enables greater penetration of the pharmaceutical market, 37(43.5%) also agree that telepharmacy is more convenient for their patient and 31(36.5%) also strongly agree that telepharmacy is an effective means of discharging pharmaceutical services.

Conclusion: Findings from the study show that most of the pharmacists practicing in Lagos were aware of the importance of telepharmacy practice and were also currently practicing telepharmacy, with also a more significant percentage of unaware pharmacists willing to practice telepharmacy. It was surmised that telepharmacy practice enables greater penetration of the pharmaceutical market, more convenient for the patients and is an effective means of offering pharmaceutical services. Telepharmacy faced some challenges, including poor internet connectivity, poor patronage, high installation cost, and lack of ICT resources, possibly leading to more telephone interviews than videoconferencing.

Keywords:

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Students' Perception and Attitude to Covid-19 New way of lecture delivery in Faculty of Pharmacy, University of Lagos, Lagos, Nigeria.

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Background: Coronavirus disease (COVID-19) is an infectious disease caused by the SARS-CoV-2 virus. In January 2020 the World Health Organization (WHO) declared the outbreak of a new coronavirus disease in Hubei Province, China to be a Public Health Emergency of International Concern.The infectious disease of the COVID-19 pandemic affected all aspects of human life including business, research, education, health, economy, sport, transportation, worship, social interactions, politics, governance, and entertainment. Since the spread of the COVID-19 pandemic, the universities have transformed teaching and learning, and the lecturers have been conducting online classes. The aim of the study was to determine the Students' Perception and Attitude to post Covid-19 lecture delivery in the Faculty of Pharmacy, University of Lagos.

Methods: A designed questionnaire which addressed the objectives of the study was self-administered to undergraduate students in 300 level to 500 level and master's students who give consent to fill the questionnaires in the Faculty of Pharmacy, University of Lagos. Data collected was analysed using SPSS version 22.0. Descriptive and appropriate inferential statistical analysis were done.

Results: Total respondents were 410. More than half of the respondents were females (234, 57.1%). Majority of the respondents were Christians (317,77.7%). Mean age of respondents was 20.34 $\pm$ 6.858 and majority were between 19-24 years (81%). Almost all the respondent selected face to face as the mode of lecture before Covid-19 (398, 97.1%) while majority selected hybrid mode of lecture post Covid-19 (308,75.1%). Only 25% (103) preferred face to face mode of lecture while 36.1% and 38.8 % preferred online and hybrid mode of lectures respectively. There was no significant difference in the selected mode of lecture between the levels of study pre Covid-19 but there was significant difference in selected mode of lecture post Covid-19 and preference of lecture mode between the levels of study.

Conclusion: Only a quarter of the respondents preferred face to face mode of lecture., the rest preferred either online or hybrid.

Keywords: Covid-19, Online hybrid lectures, Pharmacy students.

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Identification of Phytochemical components of DCM fraction of the methanolic stem extract of P*ycnanthus angolensis* by gas chromatography-mass spectrometry (GC-MS).

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Background: *Pcynanthus angolensis* is a widely used medicinal plant belonging to the family Myristicaceace and it is commonly known as African nutmeg or false nutmeg and is native to the forest zones of West Central Africa. It is used extensively in traditional medicine to treat various ailments including cognitive impairment, inflammation, microbial infection, diabetes, wounds and as an antidote to poisoning.

Methods: The chemical constituents of the dichloromethane (DCM) fraction of the stem bark of was investigated using Gas chromatography-mass spectrometry (GC-MS). Analysis of mass spectrum GC-MS was conducted using the database of a reference library, that of National Institute Standard and Technique (NIST), the fragmentation pattern of the mass spectrum of the unknown component was compared (head to tail) with those stored in the NIST Library

Results: The GC-MS analysis of the DCM fraction of the stem bark of *Pcynanthus angolensis* showed a GC-MS chromatogram of thirteen peaks (ie. thirteen compounds), they include 1,2-Benzenedicarboxylic acid, Hexadecanoic acid, methyl ester, 1,2-Benzenedicarboxylic acid, 9-Octadecenoic acid, methyl ester, Methyl stearate, Eicosanoic acid, methyl ester, Docosanoic acid, methyl ester, and Bis(2-ethylhexyl) phthalate. Also the retention time, peak area, molecular formulae, molecular weight, and the biological activities of the identified compounds were highlighted.

Conclusions and Implications: The result of the analysis showed that *Pcynanthus angolensis* contains pharmacologically important bioactive compounds. The presence of these bioactive compounds justifies the use of the plant for various ailments traditionally.

Keywords: Chromatography, Mass spectrometry, *Pcynanthus angolensis,* Bioactive compounds

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Characterization of carboxymethylated *Enterolobium cyclocarpum* gum and evaluation of its binding properties in ibuprofen tablet formulations.

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Background: The use of natural polymers as excipients (such as binders) in drug delivery is due majorly to their affordability, low toxicity, biocompatibity, physiological inertness and biodegradability. Some of the disadvantages of these natural polymers such as poor cohesive and dynamic properties are reduced by modification of the polymers which can be achieved using physical or chemical methods. The study therefore aims to evaluate the binding effect of native (EcG) and carboxymethylated *Enterolobium cyclocarpum* gum (CEcG) in directly compressed ibuprofen tablets, in comparison with hydroxypropylmethylcellulose.

Method: The polymers were comparatively characterized using morphology, flow properties, Fourier Transform Infrared (FTIR) spectra, swelling index and pH (at 27±0.1^{0}C and 80±1.1 ^{0}C), rheology measurements and density measurements as the criteria for assessments. Ibuprofen formulations containing 0%w/w – 10%w/w polymers as binders were directly compressed. The tablets were evaluated for their mechanical and release properties. The results were analyzed using mean (n=3) and standard deviation.

Results: Carboxymethylation of EcG led to the production of spherical shaped particles with no significant difference in flow properties when compared with the native gum. Modification of EcG by carboxymethylation did not cause any major shifting and appearance of any new prominent characteristic peaks in the FTIR spectra. Heat had a significant effect on the swelling index (HPMC > CEcG > EcG and HPMC > EcG > CEcG at 27±0. 1^{0}C and 80±1.1 ^{0}C respectively), pH and solubility of the polymers. Modification of the native gum had a significant effect on the rheology of the gum as the carboxymethylated gum had lower peak, final and breakdown viscosities. All the tablets passed the uniformity of weight and crushing strength tests, with tablets containing CEcG having the highest crushing strength values. All the tablets disintegrated after fifteen minutes, while tablets containing 2.5%w/w HPMC released ibuprofen at the fastest rate.

Conclusion: Carboxymethylation of *Enterolobium cyclocarpum* gum led to improved physicochemical and functional properties of the native gum and produced tablets with higher mechanical strengths.

Keywords: Natural polymers, *Enterolobium cyclocarpum,* Carboxymethylation, Direct compression, Binding effect.

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Assessment of malaria therapeutic outcomes in children under 12 years of age among three health facilities Bayelsa State

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Background: Malaria is the number one public health problem in Nigeria, responsible for about 30% of deaths in under-fives, 25% of deaths in infants and 11% maternal mortality. The objective of the study was to determine the outcomes of malaria treatment in children under 12 years of age admitted and managed in three health facilities of Bayelsa State, Nigeria, and the treatment pattern conformity to standard treatment guidelines.

Method: A descriptive retrospective study was designed, and data collection instrument was used to generate clinical, medical and medication history of children from the selected health facilities, from January 2019 to June 2020. A total 1,312 children's data were collected for the survey. Data was analyzed using chi-square (x^2) test with SPSS software version 23.0, and Microsoft excel, 2013.

Results: Among the 1,312 participants, MP test was conducted for only 37.73% patients. 97.1% of the patients at FHI spent aboveN10000, but at the PHC, majority (58.3%) of the patients spent <N1000. 49.1% at the FHI spent 1 day at the facility, with similar outcome at SEC, but 51.7% spent 2 -3 days at PHC. The most frequent diagnosis encountered at the PHC was acute/uncomplicated malaria (43.0%), and followed by malaria with dysentery (21.3%), and malaria with GET plus URTI (15.7%). For SEC and FHI, malaria with GET (22.5%) and severe malaria with meningitis (18.1%), were the most frequent. Majority of the patients were properly managed and discharged (DC) in all facilities; FHI (73.0%), SEC (91.1%), and PHC (94.0%). Other notable outcomes included ability to carry out task by patients (Ab); 76.1% at FHI, 92.7% at SEC, and 93.0% at PHC; body temperature being dropped to normal (TDN); 50.4% for FHI, 95.2% for SEC, and 100% for PHC. There was a significant association between demographic data and treatment outcomes at p-value <0.05.

Conclusion: Although there was adequate management of patients from the three health facilities and appropriate prescription pattern for malaria and comorbidities observed, there was low proportion of patients for which MP test was done especially at the FHI.

Keywords: Malaria, Therapy, Outcomes, Under-12 years, Bayelsa, Nigeria

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Comparative Study of Physicochemical Properties of Metronidazole Infusion Marketed in Enugu State, Nigeria.

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Background: Substandard medicines are widespread and represent a threat to health because they can lead to healthcare failures, such as antibiotic resistance, waste of fund and prolonged stay in hospital as well as death. The estimated overall prevalence of poor-quality medicines was found to be 13.6 %. Because of these physicians' encounter problems on selection of good quality brands of drugs for treatment. Substandard drugs involve both lifesaving and lifestyles. The aim of the study is to determine quality of Metronidazole infusion brands in Enugu, comparative study on physicochemical properties of the infusion were done.

Method: Seven brands of infusion were analysed. Physicochemical properties were evaluated including physical examination, chemical analysis, and pH determination. Drug content was assayed using ultra –violet spectroscopic method according to British Pharmacopoeia (BP).

Results: Physical examinations of all brands showed no presence of particles and were colourless. Chemical identification tests of all brands were positive. Two brands pH were not within the British Pharmacopeia pH range of 4.5 – 6.0. The pH of brands A and B were 6.6 and 6.1respectively. Drug assay showed that only Brand A failed percentage drug content having 60 %.

Conclusion: Based on these results, brands A and B of Metronidazole infusion does not comply with quality specifications.

Key Words: Substandard drugs, Metronidazole, Drug quality and Ultra-Violet Spectroscopy

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Evaluation of Normal Saline Infusion Quality Marketed In Enugu State

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Background: Substandard drugs comprise an increasing percentage of the drug market in both developed and less developed countries. Substandard products are authorized medical products that fail to meet their specifications. The prevalence of substandard/counterfeit medicines ranged from 11-48% [1]. Fluid therapy is a critical component of clinical management of patients. The most used fluid therapy world-wide is normal saline[2]. Normal saline is a crystalloid fluid administered through intravenous solution. Normal saline contains electrolytes (sodium and chloride) which dissociates in solution. It is used as sources of hydration and electrolyte disturbances for both adult and pediatric populations[2].

Objectives: Normal saline is the most common fluid for clinical management. Administration of poor quality will significantly affect therapeutic outcome hence the study investigates the quality of normal saline infusion marketed in Enugu.

Method: Ten samples consisting of Five brands of normal saline, each with two different batch number were analyzed. Physical examination and pH analysis were carried out. Three replicate readings were done.

Results: Physical examination showed that all infusion was without particles. Five out of ten samples pH were out of the specification range (4.0 – 7.0) . The Samples B, D, F, I and J pH were 7.62, 8.71, 7.10, 7.10 and 7.35 respectively.

Conclusion: The evaluation of various samples of Normal saline infusion showed that half of normal saline pH failed pH specification. Normal saline infusion are stabilized at a specified pH range, as a result deviation from range may depicts improper production or deterioration from poor storage

Keywords: Substandard drugs, Normal Saline, Drug quality and pH meter

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COMPARATIVE QUALITY ASSESSMENT OF ARTEMETHER/LUMEFANTRINE FIXED-DOSE COMBINATION TABLETS OBTAINED FROM PHARMACIES AND PATENT MEDICINE STORES

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Background: Malaria is a febrile disease that causes morbidity and mortality worldwide. The combination of artemether and lumefantrine (A/L) has been recommended by the World Health Organization for the treatment of uncomplicated malaria. Therefore, the study aimed to determine the authenticity and quality of twenty different brands of Artemether/Lumefantrine fixed-dose combination sourced from pharmacies and patent medicine stores located within Chikun LGA of Kaduna State, Nigeria.

Methods: The tablets were analysed using weight variation test, disintegration test, thin layer chromatography (TLC), and reversed-phase high-performance liquid chromatography (HPLC). Separations were carried out on a Lichrospher RP 18-5µm, 100 Å, 150 x 4.6 mm column using isocratic elution with methanol: 0.05% trifluoroacetic with trimethylamine buffer (adjusted to pH 2.8 with orthophosphoric acid) in the ratio 80:20 v/v at a flow rate of 1.5 ml/min and UV detection at 210 nm.

Results: All the samples passed the weight variation test according to USP requirements and qualitative tests by TLC showed the presence of A/L. However, only 95% of the samples passed the disintegration test, and three out of the six tablets for the failed sample did not disintegrate after several months of observation. Overall, 90% of the samples met the USP specifications for percentage content (90 - 110%) of labelled claims, and no significant difference ($P < 0.05$) was observed for tablets regardless of source.

Conclusion: The study shows that disintegration tests and TLC could serve as simple tools to detect low-quality A/L tablets while the assessments showed no difference in quality between the tablets sourced from pharmacies and patent medicine vendors.

KEYWORDS: Malaria, Artemether/Lumefantrine, quality assessment, HPLC, TLC.

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Assessment of the impact of medPlan®, a medication reminder mobile application, in glaucoma patients in Benin City, Nigeria

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Background: Despite the abundance of effective therapeutic regimens, non-adherence to medications still poses an impediment to the proper management of chronic diseases [1]. However, smartphone medication reminder apps now reflect a neoteric approach to medication adherence improvement [2].

Methods: In a randomized control trial, 200 patients receiving drug therapy for glaucoma were randomized into a control or study group. The study group comprised participants who made use of medPlan®, whereas the control group consisted of those patients who did not use the application. Adherence to medication was measured for both groups using a carefully designed questionnaire and statistically analyzed.

Results: A response rate of 100 % was recorded. In the study group, 56 %, 18 % and 26 % were very adherent, moderately adherent, and non-adherent respectively as against values of 45 %, 13 % and 42 % obtained from the control group. This showed a significant positive impact of the medication reminder application ($p = 0.0110$) on adherence to medication.

Conclusion: Medication adherence was improved in glaucoma patients who used medPlan®. This study lays a foundation for further research on medication reminder mobile applications.

Keywords: Glaucoma, Medication adherence, Medication reminder, medPlan®, Smartphone.

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ANTIDIABETIC EFFECTS OF *Parinari curatellifolia* EXTRACT (PCE) IN INSULIN RESISTANT 3T3-L1 ADIPOCYTES

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Background: Diabetes is one of the fastest-growing health emergencies with a severe economic burden on many countries. Current management approaches have improved diabetic care, but several limitations still exist, such as decreased efficacy, adverse effects, and the high cost of treatment, particularly for developing nations. There is a need for research to find alternative and cost-effective therapies for diabetes. The evidence-based application of phytochemicals from plants in managing diseases is gaining traction. Various parts of *Parinari curatellifolia* have been used by traditional medicine practitioners of Nigeria in the management of diabetes. Most of which have been evaluated using different biochemical models. The 3T3-L1 adipocyte cells have been used to study metabolic regulations such as insulin-resistant diabetes.

Method: We used 3T3-L1 adipocyte cells to evaluate the antidiabetic effects of *Parinari curatellifolia* leaf extract (PCE) on adipogenesis, acetyl CoA carboxylase (ACC), AMP-activated protein kinase (AMPK), and glucose transporter type 4 (GLUT4). 3T3-L1 fibroblast was cultured in a twelve-well plate using high glucose Dulbecco's Modified Eagle Medium (DMEM) until fully confluent. Fibroblasts were differentiated in a medium containing insulin, isobutyl methylxanthine (IBMX), dexamethasone, troglitazone, and 10% fetal bovine serum with or without PCE for ten days and stained with Oil Red O for the adipogenesis experiment. We also incubate fully differentiated cells in 5-aminoimidazole-4-carboxamide-1-β-D-ribofuranoside (AICAR) and insulin to probe for phosphorylation of ACC and AMPK using Western blotting techniques and Licor image studio. Finally, the glucose translocation (GLUT4) level was quantified using densitometry.

Results: The results showed a modest antiadipogenic effect by PCE, thus reducing fat deposits and obesity shown to be beneficial in type 2 diabetes. The results also showed increased phosphorylation of ACC and AMPK. ACC is a regulator of energy metabolism and fatty acids in mammals. AMPK is a crucial energy sensor that activates glucose uptake into the muscle. PCE stimulated glucose transport as seen by increased GLUT4.

Conclusion: PCE demonstrates antidiabetic effects on markers of type 2 diabetes in 3T3-L1 adipocyte cells.

Keywords: Type 2 Diabetes, activated protein kinase, *Parinari curatellifolia*

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PHYSICAL ASSESSMENT AND ATOMIC ABSORPTION SPECTROPHOTOMETRIC ANALYSIS OF CADMIUM AND LEAD IN TWENTY-FIVE BRANDS OF CIPROFLOXACIN TABLETS MARKETED IN LAGOS, NIGERIA

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Background: Ciprofloxacin is a second-generation broad-spectrum antibiotic of the fluoroquinolone class. Several brands of this drug class are marketed for public consumption; hence, it has placed the public in a confused state about the best brands with suitable physical characteristics and safe oral consumption. The aim of this study is to evaluate the physical quality and the amount of Cadmium and Lead in twenty-five brands of Ciprofloxacin tablets marketed in Lagos, Nigeria,

Methods: Physical assessment parameters; Uniformity of weight, Hardness, Friability and Disintegration tests. Determining the amount of Cadmium and Lead with the Atomic Absorption Spectrophotometer (AAS).

Results: Among all the brands of Ciprofloxacin tablets analyzed, 96% passed the Uniformity of weight test, 52% passed the Hardness test, 96% passed the Friability test, and 96% passed the disintegration test while 2% passed the test according to the Permitted Daily Exposure (PDE) to Cadmium. 72% passed the test according to the Permitted Daily Exposure (PDE) to Lead.

Conclusions: The brands that passed the physical tests have good quality and correct physical characteristics. Cadmium and Lead are of no benefit to humanity in the body. Their accumulation in the body can predispose humans to risks of contracting some health problems.

Keywords: Ciprofloxacin, Physical characteristics, Atomic Absorption Spectrophotometer, Cadmium, Lead.

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A One Year Retrospective Study on Anti-hypertensive Consumption in NHIS Pharmacy at University of Abuja Teaching Hospital, Gwagwalada, Abuja

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Background: With rarely any symptom, hypertension is singled out to be the major cause of cardiovascular disorders like stroke and coronary heart disease. Drug utilization studies are conducted to aid the rational use of medicines and can be used to gain insight to the most prescribed drug and to know if a particular medicine provide value for money. This study aimed at identifying the most frequently prescribed antihypertensive medicine and its availability at the NHIS pharmacy in University of Abuja Teaching Hospital (UATH), Gwagwalada.

Method: The study was a cross-sectional retrospective study on utilization rate of anti-hypertensive drugs in NHIS pharmacy of UATH, Gwagwalada. All prescriptions containing anti-hypertensive medicine from 1st January 2018 to 31st December 2018 were included. A total of 13,321 prescriptions were checked for anti-hypertensive drugs. Two categories prescribed and dispensed and prescribed but out of stock were collected and documented using the tally method. Anti-hypertensive drugs were divided into seven classes: angiotensin converting enzyme inhibitors (ACEIs), angiotensin receptor blockers (ARBs), beta blockers (BBs), calcium channel blockers (CCBs), centrally acting (CA), diuretics, and fixed dose combination (FDC). Data collected were divided into 4 months (January to April, May to August, and September to December). This study only looked at the consumption of anti-hypertensive drugs without considering the socio-demographic information of the patients.

Result: Out of the 13,321 prescriptions attended to at the NHIS Pharmacy, only 639 (4.8%) contained prescription with anti-hypertensive drugs. Calcium channel blockers accounted for the most prescribed drugs (35.1%), followed by ACEIs (20.2%). The least prescribed anti-hypertensive is the centrally acting (2.3%). The calcium channel blockers were the most out of stock despite being the most prescribed. From the divided months, CCBs were the most prescribed and accounted for32.1%, 31.0% and 38.7% in January to April, May to August, and September to December respectively.

Conclusion: Calcium channel blockers accounted for the most prescribed and out of stock anti-hypertensive, followed by the angiotensin converting enzymes. The centrally acting were the least prescribed anti-hypertensive.

Keywords: Anti-hypertensive, Drug utilization, Retrospective study

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BUILDING PHARMACEUTICAL SERVICES SUSTAINABILITY THROUGH WORKFORCE SUPPORT DEVELOPMENT

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Background: The healthcare services havewitnessed increasing fulfilling roles and responsibility in pharmaceutical services, especially in improving access and appropriate use of medicines.Currently, Pharmacists role has evolved from compounding and dispensing medicines to that of multidiscipline pharmacy healthcare. Adequate workforce enhanced by advanced planning and training is needed to package the expertise and skill to enabled improved health.Researches onknowledge and perception of pharmacists on workforce development are limited hence this investigation on the development of a viable pharmacy support workforce in Nigerian.
The objective of this research is to identify the knowledge, attitude and perceptions of pharmacists to human resources management and identify gaps in workforce training and development.
Methods: Descriptive survey of 125 pharmacists attending an annual conference of the pharmaceutical society of Nigeria (PSN) was randomly sampled with the aid of a pretested semi-structured questionnaire. The questionnaire comprises three main sections in line the study objectives and designed using simple statements on Likert-type scale having weighting scores of 0-4. Data collected were analyzed using descriptive and inferential statistics at 5% level of significance.
Results: The respondents agree with the statement measuring the concept of Human resources management with a Mean weighted average (MWA) of 33.97% for knowledge, 27.0% for attitude and 27.7% for human resources practices. There were clear indications that shortages of health workers being a critical challenge to pharmacy practice and pharmacists show acceptability of pharmacy technicians over Auxiliary nurses as support workforce.
Conclusion: The necessity of pharmacists to build reputable workforce training and development is highly recommended. The establishment of policies that will build the necessary legislation for trainingworkforce will promote effective environment for sustainable practice and guarantee organizational goals achievements.

Key words: Pharmaceutical Sustainability, Support Workforce, Pharmacy technicians, Auxiliary nurses.

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Knowledge, Practice and Impact of Online Medication Therapy Management (OMTM) during emergency on patients in Public Hospitals in Oyo State, Nigeria

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Background: Medication Therapy Management (MTM) is concerned with services provided by health care providers, including pharmacists, to ensure the best therapeutic outcomes for patients. Online Medication Therapy Management (OMTM) is a new concept in managing the medication challenges of patients who are unable to visit the hospitals, especially during emergency. The lock-down during covid-19 pandemic made it imperative to seek effective means of ensuring people have access to medication without further compromising their health and that of the pharmacists. A study on OMTM is capable of contributing to the improvement and expansion of the pharmaceutical services that pharmacists provide and improve patients' health. This study therefore examined the impact of knowledge and practice of OMTM by pharmacists on patients' satisfaction with pharmaceutical services in public hospitals in Oyo state.

Method: The study adopted a qualitative approach to have a deeper insight into factors influencing adoption of online MTM. Social Action and Consumer Satisfaction Equity theories were used as the framework to explain how the adoption of OMTM influenced patients' perception of the pharmaceutical care provided by pharmacists.

Results: Oyo State was purposively selected with low pharmacist-patient ratio of 1:25,000. Two public hospitals were randomly selected from each senatorial district of Oyo North (Ogbomoso and Saki), Central (Oyo and Moniya) and South (Adeoyo and Ring Road). In-depth interviews (IDI) were conducted with 24 patients and their relatives. Key informant interviews (KII) were conducted physically with 9 hospital pharmacists and 3 pharmacists at directorate levels, while 10 other pharmacists were interviewed online. The study revealed poor knowledge of OMTM by pharmacists and most patients, due largely to poor facilities and infrastructural deficiencies at the hospitals, poor training for pharmacists on OMTM and lack of awareness among the patients.

Conclusion: Pharmacists were not able to have access to medication history of patients, and exchange information on previous cases of ADEs among patients. There is need to equip the hospitals and create awareness on online medication therapy among patients.

Keywords: Online Medication Therapy, Pharmaceutical care, emergency

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ASSESSMENT OF KNOWLEDGE AND SKILLS OF COMMUNITY PHARMACISTS IN PROVIDING PRIMARY HEALTHCARE SERVICES: A CASE FOR INTEGRATING COMMUNITY PHARMACIES INTO NIGERIA'S HEALTH SYSTEM SPACE

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Background: The integration of healthcare organizations into the health system is one of the strategies for increased access to healthcare services. Community pharmacy settings and pharmacists are the most accessible and real time health professionals who do not require prior appointments before patients are seen. Clients accessing this model of care have often times expressed satisfaction with the quality of services delivered at the community pharmacies.

Objective: This research examined the knowledge and skills of pharmacists in providing basic primary care services in the community pharmacy settings in Nasarawa State, Nigeria.

Methods: The cross-sectional survey of pharmacists practicing within the community pharmacy settings in Nasarawa State, Nigeria. Respondents were purposively recruited to fill the research questionnaire. Data were collected between January and May 2022. Purposive sampling method was adopted – samples were drawn from the total number of registered community pharmacies in the country as at December 2021 as obtained from the Pharmacists Council of Nigeria (PCN).

Results: A total of 436 respondents with a mean (±SD) age of 38.4 years; respondents within 36 and 45 years accounted for the highest proportion (42.6%).An estimated 75.2% were males; 84.2% of had a Bachelor of Pharmacy, whereas only 5.5% had additional clinical qualifications. Likewise, 64.2% of the respondents were providing basic primary care services. Available structures for primary care services in community pharmacy settings included: consulting room, equipment for measuring vitals, cold chain equipment for the storage of thermolabile substances, and colored coded bins for healthcare waste segregation. Health promotion intervention that were carried out included but not limited to smoking cessation, need for women to attend antenatal care clinics, immunization importance, and counseling on medication adherence. A 74.3% of the respondents' document their activities with 82.3% said they recorded it in the note books and inventory control cards.

Conclusion: Integrating Community pharmacies into Nigeria's health architecture has the potential to expand access to quality health care services; also represents a suitable platform to drive the attainment of the sustainable development goals and the Universal Health Coverage.

Keywords: Community Pharmacy, Health System, Pharmacists, Primary Healthcare Integration

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TRENDS OF PHARMACISTS-LED DIABETES CARE IN NIGERIA (2000-2022): A SYSTEMATIC REVIEW

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Background: Diabetes mellitus (DM) is a chronic disease of global health concern. The burden of DM in Nigeria has increased from 2.2% in 1997 to 5.77% 2018. It is associated with high morbidity and mortality due to complications and therefore requires the input of all care providers to ensure optimal care. Pharmacists worldwide are involved in diabetic care, with evidence of positive outcomes, but diabetes-care studies conducted by pharmacist in Nigeria have not been extensively reviewed

Purpose: This review was aimed at describing the geographical spread and quality of diabetes-care research conducted by pharmacists in Nigeria

Methods: To identify diabetes-care research conducted by pharmacists in Nigeria, literature search for articles published between January 1, 2000 and June 5, 2022 was conducted, using databases such as PubMed/Medline, African Journal Online, Clinical Trials Registries, and Google Scholar. Medical subject headings (MeSH) and text terms combined with Boolean operators were among the keywords and search terms used for article identification. Only studies published in English language were considered

Results: Of the 62 studies retained for review, 51 were conducted in the southern zone of Nigeria (South-West 25, South-East 15 and South-South 11) and 11 in the north (North-East 6, North-Central 4 and North-West 1). Most of the studies (92%) were published between 2010 and 2022, with 83.9% conducted using cross-sectional design, 4.8% were Quasi-randomised studies and 11.3% were Randomised Controlled Trials. This review revealed that patients who received pharmacist-delivered care had significantly improved medication adherence, clinical variables and quality of life, with more cost-effective management compared to the usual care group

Conclusion: The contribution of pharmacists to diabetes care in Nigeria has significantly improved over the last decade. Majority of the studies (82.3%) were conducted in the country's southern zone and only 11.3% were randomised controlled trials with significant improvement in patients' treatment outcomes. More high-quality patient-care research are recommended at state (especially northern states) and national levels to generate more evidence of pharmacists' contribution to diabetes management in Nigeria

Key Words: Pharmacists, Diabetes Care, Pharmaceutical care, systematic review, Nigeria

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INFLUENCE OF DEMOGRAPHIC VARIABLES ON THE QUALITY OF LIFE OF HYPERTENSIVE PATIENTS IN A TERTIARY CARE FACILITY IN BENUE STATE, NIGERIA

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Background: The quality of life of patients living with long term hypertension has been a matter of concern to clinicians. Several demographic factors have been shown to influence HRQol scores either alone or in the presence of study setting variables. The relationship between quality of life and hypertension has received extensive reviews and the conclusion is that hypertensive patients tend to have lower quality of life compared to normotensive individuals. There is also consensus among experts that living with hypertension influences physical, mental, and psychological well-being of patients, that could be made worse by the presence of comorbidities. The relationship between hypertension and quality of life has received several reviews all of which indicated that individuals living with hypertension generally have lower health related quality of life [HRQol] compared to normotensive individuals. Literature evidence indicates that HRQol is influenced by multiple patient specific variables, however, studies in resource limited settings on the subject is rather scanty.

Methods: The study was a prospective observational study involving a cohort of hypertensive patients on different antihypertensive regimens. Patients who met eligibility criteria and consented to participate were enrolled and followed up for six months. Data was collected using SF-12 questionnaire on enrollment, three and at sixth month. The quality of life was calculated using standard procedure and influence of demographic variables on HRQol was determined with Student t test and One-way ANOVA. P values ≤ 0.05 was considered statistically significant.

Results/Discussion: The HRQol was generally below average for most patients, while body mass index [BMI], educational status, occupation and physical exercise significantly reduce perceived quality of life of [P = < 0.001]. The influence of demographic variables on HRQol vary widely between studies reflecting the diverse study populations and settings. Low quality of life of patients on antihypertensive therapy remain an ongoing challenge that should receive attention of providers.

Conclusion: A number of demographic factors have been shown to influence HRQol scores either alone or in the presence of study setting variables. HRQol assessment is a critical component of sustaining medication adherence, management of side effects and perception of overall wellbeing among patients [2]. The overall HRQol of hypertensive patients was generally less than average which is indicative of the need to recognize influencing factors so as to develop patient specific interventions. The need for blood pressure control and improvement in HRQol.

KEYWORDS: Hypertension; SF-12; HRQol; Demographic variables; Pharmacotherapy.

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DRUG TREATMENT OF GESTATIONAL HYPERTENSION; IMPLICATIONS FOR MATERNAL AND FETAL WELLBEING

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Background: Chronic hypertension is globally estimated to be a complicating factor in 1–5% of all pregnancies. Gestational hypertension is reported to be present in 5–10% of all pregnancies, though it is reported to vary widely among different populations depending on diagnostic criteria. Hypertension in pregnancy carries high risk of adverse maternal and fetal outcomes. It is implicated in pre-eclampsia, proteinuria and eclampsia all of which carry high risk of maternal mortality. Gestational hypertension that is uncontrolled is often associated with low birth weight, intra-uterine growth retardation, still births and neonatal death. Antihypertensive therapy plays a critical role in not only improving maternal wellbeing, but also good fetal development and post-delivery survival. This study aims to assess antihypertensive utilization and their effect on maternal and fetal outcomes.

Methods: This was a cohort observational study involving hypertensive women who received antenatal care in a tertiary hospital. Data was extracted from randomly selected medical records of eligible patients. The blood pressure, morbidity, drug(s), delivery method and fetal health data were used for analysis. **Analysis**: Data was analyzed using SPSS 21 for descriptive and inferential analysis. Pearson correlation test was used to assess relationship between antihypertensive drugs and maternal or fetal outcomes.

Results: Majority of women with gestational hypertension were housewives with intermediate level education. The mean age of subjects was 35.5 ± 6.6 years with a mean parity 3.2 ± 1.8. The mean PCV [31.3± 4.7] was well below the recommended level indicating high levels of anemia. Maternal mortality and hypertensive complications remain relatively high, so also was prevalence of low birth weight and foetal deaths. A strong association was observed between aggressive blood pressure control and adverse foetal outcomes. Similar observation was noted for combination therapies involving diuretics. Overall, prevalence of adverse fetal outcomes occurred in about a third of pregnancies which is an unacceptably high figure. This may be partly due to either late presentation and/or late referral from lower-level health facilities.

Conclusion: Maternal and foetal mortality was unacceptably high and aggressive antihypertensive therapy management may be one of the many contributory factors. The use of thiazide-based therapies was strongly associated with adverse fetal outcomes, so utmost care should be taken in all drug therapies. There should be better use of drugs and improved blood pressure control among hypertensive pregnant women to improve maternal and fetal wellbeing.

Keywords: Pregnancy, Gestational hypertension, Drug therapy, fetal outcomes, maternal outcomes.

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Antimicrobial Drug Prescription Patterns for Respiratory Tract Infections in Military Hospitals Lagos Nigeria.

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Background: Antibiotics are powerful and effective medicines used for treating infections caused by bacteria. Of all the challenges faced due to antibiotics abuse, the greatest is antibiotic resistance. A major cause of antibiotic resistance is the wrong use of antibiotics in the management of diseases not caused by bacteria. Antibiotics are irrationally used in the treatment of viral infections as seen in many cases of respiratory tract infections. This study aims to evaluate the frequency of various RTIs, the management and factors that influence antimicrobial prescription patterns for various RTIs in Military Hospital Lagos, Lagos State, Nigeria.

Methods: A cross-sectional study was conducted in Military Hospital Lagos where Data was obtained, using two designs of questionnaires, from prescribers and patient records. The target population was all patients treated for RTIs within a period of seven years and all prescribers who had treated patients for RTIs in Military Hospital Lagos. Post-Hoc Power Analysis with Dichotomous Endpoint was utilized in obtaining the sample size. Reliability tests of the instruments was obtained using Cronbach's Alpha. This involved descriptive statistical analysis, Chi-Square test, Binary Logistic regression analysis. The data used in the study were obtained from 209 patient records and 30 physicians.

Results: In this study, it was observed that 196(93.8%) patients admitted at Military Hospital Lagos for RTI presented with Upper Respiratory Tract Infections (URTIs; cough, common cold, pharyngitis, tonsillitis), 11(5.3%) with Lower respiratory tract infections (LRTIs; pneumonia and bronchitis) and 2(0.9) with COVID. Young patients<45years (125) made up about 60% of the admissions. RTIs were more prevalent in females (111, 53.1%) than in males (98, 46.9%). It was observed that 21 (70%) physicians followed the Standard Treatment Guidelines (STG) in prescribing antibiotics for RTIs, 11(36.7%) physicians modelled their choice of antimicrobials after the senior consultants, 4(13.3%) on sensitivity results, 1(3.3%) on period preferences and 3(10%) on other factors.

Conclusion: The gender of patient, physician educational qualification, observation of RTIs and frequency of RTIs significantly influence the antimicrobial prescription pattern for various RTIs in Military Hospital Lagos. In order to increase prescription quality, improve the rationality of drug use and reduce the prevalence of antibiotic resistance, we recommend the development of targeted intervention programs including but not limited to continuous enlightenment of physicians on strict compliance to the guidelines in the management of RTIs.

Keywords: Prescription patterns, Respiratory tract infections, Antimicrobials

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Antimicrobial use pattern in Obstetrics and Gynaecological wards of a tertiary health institution in Yenagoa, Bayelsa State, Nigeria.

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Background: Antimicrobials are the bedrock for the treatment and control of infections and, are commonly used, though limited to their safety, in Obstetrics and Gynaecology (O and G) wards. Prompt initiation of antimicrobials to treat infections reduces morbidity and saves life. However, irrational use of antimicrobial can lead to development of drug resistant micro-organism species. Anti-Microbial Resistance, AMR, is a global health and development threat which requires urgent multi-sectoral action. WHO has declared AMR as one of the top 10 global public health threats facing humanity and, antimicrobial use (misuse and overuse) has been identified as the main cause of AMR. This study intends to evaluate the antimicrobial use pattern in O and G wards of a tertiary hospital in Yenagoa, using WHO AwaRe classification of antibiotics and some selected indicators for investigating antimicrobial use in hospitals, developed by the Strengthening Pharmaceutical Systems. The aim of this study is to determine the antimicrobial use pattern in O and G wards of a tertiary health institution in Yenagoa, Bayelsa State.

Methods: A 14 months' prospective study was carried out in four O and G wards in a tertiary health institution in Yenagoa, namely, Post-Natal Cesarean Section (PN CS), Post-Natal Spontaneous Vaginal delivery (PN SVD), Gynaecology (GYNAE) and Antenatal (ANTENAT) Wards. Relevant data from 468 patients admitted to the wards during the study period were collated and analyzed using simple percentage and statistical analysis.

Results: Metronidazole was the most used antimicrobial agent with 40.1% (n = 1008) while clarithromycin (0.2%) was the least used. 37.4% of the antimicrobial agents prescribed was in injectable dosage form. 65.6% (n= 468) of the prescriptions were prescribed empirically. With targeted treatment, 93.7% (n = 161) positive therapeutic outcome was achieved while with empirical treatment, 87.3% positive therapeutic outcome was achieved. About 65% of the prescriptions containing antimicrobials were found to be in the Access category, while 35% were found to be in the Watch category of the WHO AWaRe Group.

Conclusion: Targeted treatment is essential for better therapeutic outcome and reduces AMR. There is observed underuse of the WHO Access group of antibiotics (42.9% Vs ≥ 60%) and overuse (57.1%) of the Watch group. There is also overuse of the injectable dosage form of antimicrobial (37.4% Vs 13.4 - 24.1%) as well as overindulgence (65.6%) in empirical treatment by prescribers. There exists hospital formulary but, compliance to it was not total.

Key words: Antimicrobial, Misuse, Resistance, AWaRe

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Evaluation of the antidiabetic activity of the Ethanol Leaf extract of Plectranthus neochilus Jos-South Cultivars

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Background: *Plectranthus neochilus* is an aromatic herb that is reported to possess both medicinal and nutritional properties. It is distributed in various regions of sub-Saharan Africa and has been associated ethnomedicinally with the control of blood sugar and blood pressure amongst other claims. This investigation was therefore aimed at evaluating the effect of the ethanolic leaf extract of the plant (*Pnelex*) on blood glucose *in vivo*.

Methods: The *Plectranthus neochilus* leaves were harvested from Jos-South cultivars and subsequently identified and authenticated. The leaves were then pulverized and extracted using ethanol as solvent with the aid of a soxhlet extractor followed by rotary evaporator to recover the ethanol. The extract was subjected to phytochemical screening using standard methods. Albino Wister Rats (AWR) were employed in the study and ethical clearance and protocols were duly obtained and observed. The rats were randomized into 6 groups by units of five with identification. Acute toxicity study was carried out by the administration of (10 – 5000) mg/kg body weight as par Lorke's method. Diabetes was induced in the experimental groups using Alloxan with due consideration for their body weights. The induced rats were orally administered *Pnelex* for a period of 28 days at different doses of (250, 500 & 1000) mg/kg body weight with respect to the groups. The Blood glucose levels were closely monitored using a sensitive Glucometer Kit.

Results: There was no occurrence of acute toxicity and mortality between the doses (10 – 5000) mg/kg, implying that the lethal dose of the extract is greater than 5000 mg/kg body weight. Some of the parameters analyzed after administration include serum chemistry, serum enzymes, lipid profile, renal function, electrolytes and hematology. The results obtained were in the normal range. The Phytochemical screening of *Pnelex* revealed the presence of alkaloids, flavonoids, saponins, tannins, cardiac glycosides, carbohydrates, steroids, terpenes with anthraquinones absent. The ameliorating effect upon the administration of *Pnelex in* elevated blood glucose level associated with Alloxan induced diabetic rats was marked as the 1000 mg/kg body weight produced a significant reduction in blood glucose from 27.85±0.95 to 10.15±4.35.

Conclusion: The study has shown that treatment of Alloxan induced diabetic rats with the ethanol leaf extracts of *Plectranthus neochilus* (*Pnelex*) significantly ($p<0.05$) reduced elevated blood glucose level This implies that *Pnelex* is a rich source of phytochemicals with potent hypoglycemic effect that can be further explored in the search for new antidiabetic agents.

Keywords: Hypoglycemic, Phytochemicals, Metformin, *Plectranthus neochilus.*

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Adverse drug reactions associated with dolutegravir based regimens in first line HIV patients in a general hospital, Lagos, Nigeria

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Background: In 2018, WHO mandated the switch of all first-line antiretroviral therapy (ART) patients to dolutegravir (DTG) based regimens. This decision was based on its believed superiority in efficacy, tolerability, the barrier to resistance, and availability in fixed-dose combination. However, there is an information dearth on the efficacy and safety of DTG in real-life settings in Nigeria. More so, a higher incidence of adverse drug reactions (ADRs) and discontinuation has been observed. This study aimed at evaluating the efficacy of DTG, documenting ADRs associated with DTG and assessing the satisfaction, acceptability, and tolerability of DTG among patients in General Hospital, Lagos.

Method: The study was carried out in General Hospital Lagos, Nigeria among first-line ART patients on DTG based regimen. Data collection forms were used to extract patients' specific information on viral suppression and adverse drug reactions experienced with DTG for 150 patients. A modified questionnaire was also administered to 150 patients to assess their satisfaction, acceptability, and tolerability of DTG.

Results: The study showed DTG based regimen was superior to NNRTI based regimen (92% versus 79%) in the achievement of viral suppression (HIV RNA-1 < 100 Copies/ml) at 52 weeks. ADRs associated with DTG were observed to have an incidence rate of 28%. The most frequently observed ADRs were hyperglycaemia (38%) and neuro psychiatric ADRs (21%). DTG was found to increase levels of liver function enzymes and creatinine, which was exaggerated in patients with underlying hepatic and renal dysfunction, thereby exacerbating end-organ damage. A discontinuation rate of 7% was identified among patients on DTG with about 60% due to ADRs. The overall patients' satisfaction with DTG was 93% despite initial concerns about DTG during the transition phase.

Conclusion: DTG is no doubt highly efficacious, but it is associated with varying degrees of ADRs which require continuous monitoring especially in comorbidities. A high level of satisfaction, acceptability, and tolerability of DTG among transited patients was observed despite their initial impression and concerns about DTG. Hence, the mandatory transition to DTG could be said to be a favourable decision.

Keywords: Dolutegravir, Adverse drug reactions (ADRs), HIV

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Knowledge, attitude and adherence to tuberculosis preventive therapy by people living with HIV accessing care in large treatment site in Lagos, Nigeria: a cross sectional study

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Background: Tuberculosis preventive therapy (TPT) using isoniazid as recommended by WHO is currently being implemented in Nigeria in people living with HIV (PLWH). Few studies have accessed the uptake, knowledge, attitude, and adherence to TPT among PLWH hence the aim of this study.

Methods: This cross-sectional study with retrospective component was carried out between November to December 2021 at Lagos University Teaching hospital (LUTH). Uptake of TPT was assessed retrospectively from patients' record. while their knowledge and attitude towards TPT were assessed using validated questionnaires systematically distributed to the study participants. Self-report adherence was assessed by self-reports of dose, time, and food. Data collected were analyzed using SPSS version 23.0. A Chi-square test was carried out to test the associations between categorical variables with the level of significance set at $p<0.05$.

Results: During the study period only 2354 (10.7%) of the 22,000 who were accessing care in LUTH. The sample of 330 AALHIV had an average age of 43.1± 8.1years old, 226 (68.5%) were females, 286 (86.7%) Christians, 234(70.9%) married, 258 (78.2%) employed, and 159 (48.2%) completed secondary education. Clinical demographics of the sampled PLWH revealed that 255 (77.3%) were on Tenofovir/Lamivudine/Dolutegravir combination followed by Tenofovir/Lamivudine/ritonavir boosted Atazanavir (54,16.4%). Only 44 (13.3%) of the participants were currently on TPT. Three hundred of the PLWH recorded good (90.9%) knowledge of TPT, 286 (86.7%) had positive attitude and self-reported adherence for dose was 254 (77.0%), time; 231 (70.0%); food 246 (74.5%). Only 84(25.5%) of the PLWH correctly identified isoniazid as the medicine used for TPT and the main reason for non-adherence was forgetfulness (93.1%, n=76). The test of associations of the social demographic characteristics with knowledge showed significant influence of age, level of education and employment. Attitude about TPT was significantly affected by age, marital status and employment status. All the participating AALHIV (100.0%) reported not being counseled by the pharmacist about possible food and drug interactions while on TPT.

Conclusion: In this cross-sectional study, high knowledge and attitude of TPT was reported. Self-reported adherence was good, however, gaps in TPT adherence knowledge as a result of poor adherence counseling was identified. Additional studies are needed to verify these preliminary data which indicates the need for intervention studies targeted at the study participants and health caregivers.

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