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**Compiled by: Daprim Samuel Ogaji**, *Department of Community Medicine, University of Port Harcourt Teaching Hospital, Alakabia, Rivers State, Nigeria; daprim.ogaji@uniport.edu.ng; +2348037092225*

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**Keywords:** Nigerian Medical Association, NMA, Scientific Conference, Annual General Meeting and Scientific Conference, Rivers State, Nigeria

### Abstract

NMA2025/T1/003

## Adult Clavicular Fractures in Port Harcourt: Outcome of Non-Operative Treatment

Mike Tochi Achor, Tamunokuro Ezekiel Diamond

**Corresponding author: Dr Mike Tochi Achor.** Department of Orthopaedics, Rivers State University Teaching Hospital (RSUTH), Port Harcourt, Nigeria: [Miketochi.Achor@rst.edu.ng](mailto:Miketochi.Achor@rst.edu.ng)

**Background:** Fractures of the clavicle are commonly encountered in musculoskeletal trauma. They may occur alone or in association with other injuries. Non-operative treatment remained the mainstay of management of clavicular fractures until recent evidence showed improved functional outcome and fewer complications with operative fixation for some fracture patterns and specific injury types. In most part of the underdeveloped and developing world, the indications for operative treatment are still much less probably due to a combination of limited resources and low health insurance coverage.

**Objective:** The aim of this study is to evaluate the result of non-operative treatment of fractures of the clavicle in Port Harcourt, Nigeria.

**Methodology:** The study was conducted in a state teaching hospital located in Port Harcourt, Nigeria. It is a descriptive retrospective study, spanning a period of 5 years. Patients who met the inclusion criteria and had complete information were drafted into the study. Their information was obtained from hospital records and analysed using SPSS version 26.

**Results:** Forty-six patients were recruited into the study. The age group 31-40 and 61-70 years were mostly affected (23.9% each) with female to male ratio of 1.2:1. Mid-shaft clavicular fractures were predominant (67.4%). Falls was responsible for most of the injuries (54.3%). Most of the patients (65.2%) were treated with figure-of-eight splint. Union was achieved in 89.1% of the fractures with mean time to radiological union of  $19.04 \pm 3.66$  weeks. There was positive linear correlation between increasing age and time to radiological union ( $p=0.007$ ).

**Conclusion:** The result showed that non-operative treatment is an effective method of managing clavicular fractures in adults.



**Key words:** Fracture of clavicle, Adult, Port Harcourt, non-operative treatment.

Abstract

NMA2025/T1/004

## Teachers' perspective on epilepsy: Examining their knowledge and attitudes in three selected schools in Rivers State, Nigeria

Nneka Gabriel-Job, Kininyiruchi N. Wobo

**Corresponding author:** Nneka Gabriel-Job, Department of Paediatrics, University of Port Harcourt Teaching Hospital. [ngabrieljob2014@gmail.com](mailto:ngabrieljob2014@gmail.com)

**Background:** Epilepsy is a common brain disorder associated with a high risk of discrimination and social stigmatisation. Its unpredictable nature makes children susceptible to seizure episodes at school. Teachers can play a crucial role by offering necessary support and immediate intervention. This study examined teachers' knowledge and attitudes towards epilepsy.

**Methods:** This cross-sectional study was conducted among classroom teachers in Rivers State. Data was gathered using a structured self-administered questionnaire. SPSS version 25 was utilised for analysis, and both descriptive and inferential statistics were performed.

**Results:** The study involved 132 teachers, of whom 91 (68.9%) were females. The majority, 96 (72.7%), teach in public schools and hold a first degree as their highest qualification. Most, 128 (97%), are aware of epilepsy; 18 (13.6%) believe it is caused by witchcraft; 34 (25.8%) responded that it is contagious; while 66 (50.0%) reported that traditional medicines are used for treatment. Fifty-seven (43.3%) of the teachers believe that children with epilepsy should attend a special school, and 33 (25.0%) think that having a child with epilepsy would disrupt the class's educational activities. Fifty-five (41.7%) of the teachers have a poor attitude towards children with epilepsy, and 53 (36.4%) have poor knowledge of immediate care for a convulsing child. An increase in knowledge was associated with a corresponding increase in positive attitude.

**Conclusion:** Most teachers had moderate to good knowledge of epilepsy, but their attitude and practices towards children with epilepsy were poor. Well-structured training programmes are needed to equip teachers to provide seizure first aid in schools.

**Keywords:** Epilepsy, classroom, teachers, perception, knowledge, attitude, Rivers State

Abstract

NMA2025/T1/005

## Impact of the WHO Safe Childbirth Checklist on Maternity Outcomes: A Systematic Review with Meta-Analysis

Demebo Ebipade Juliet, Alice Nte, Rosemary Ogu

**Corresponding author:** Demebo Ebipade Juliet, *Africa Centre for Excellence for Public Health and Toxicological Research* [jullydemebo@gmail.com](mailto:jullydemebo@gmail.com)

**Background:** Maternal and neonatal mortality is a health concerns, particularly in low-resource settings where quality maternity care is inconsistent. The World Health Organization Safe Childbirth Checklist (WHO SCC) was designed to enhance adherence to essential childbirth care practices, aiming to reduce preventable maternal and neonatal complications. Despite its widespread promotion, evidence regarding its effectiveness in improving key maternity outcomes remains mixed. This systematic review with meta-analysis evaluated the impact of the WHO SCC on critical maternity outcomes, specifically the prompt management of eclampsia/preeclampsia, maternal mortality, and stillbirth rates. By synthesizing available evidence, this study seeks to inform clinical practice and policy decisions regarding the implementation of the WHO SCC.

**Materials and Methods:** A systematic search strategy was employed to identify relevant studies published between 2004 and 2024. Three electronic research databases (PubMed, EBSCO and Scopus) were searched for related English-language articles. Eligible studies included pre-post studies, randomized controlled trials (RCTs), and quasi-experimental designs. Data were extracted using a standardized form, ensuring consistency and accuracy. A meta-analysis was conducted using

a random-effects model and the Mantel-Haenszel method to pool the extracted data. Ethical considerations were addressed by ensuring that only studies with ethical clearance were included in the review.

**Results:** Out of 1,147 identified articles, 11 studies involving a total of 174,994 births met the inclusion criteria. The meta-analysis demonstrated that implementation of the WHO SCC significantly improved the prompt management of eclampsia/preeclampsia (*Risk Ratio [RR]: 3.09, 95% Confidence Interval [CI]: 1.23-7.74,  $p = 0.020$* ). However, no statistically significant impact was observed on maternal mortality (*RR: 1.13, 95% CI: 0.83-1.54,  $p = 0.42$* ) or stillbirth rates (*RR: 1.18, 95% CI: 0.77-1.83,  $p = 0.45$* ).

**Conclusion:** The findings indicate that while the WHO SCC enhances the management of eclampsia/preeclampsia, it does not significantly reduce maternal mortality or stillbirth rates. These results highlight the need for complementary interventions alongside the WHO SCC to achieve broader improvements in maternity outcomes. Policy makers and Midwives should consider integrating the WHO SCC into routine clinical practice, with additional strategies aimed at addressing other determinants of maternal and neonatal survival. Further research is needed to explore and develop interventions that maximize WHO SCC impact on maternal and neonatal health.

**Keywords:** Maternal health, Meta-analysis, Neonatal mortality, Quality improvement, Stillbirth, WHO Safe Childbirth Checklist.

## Abstract

NMA2025/T1/006

# The Nigerian Medical Association, Rivers State and Prioritisation of Breastfeeding

Gracia K. Eke and Alice R. Nte

**Corresponding author:** Gracia K. Eke, *Department of Paediatrics and BFHI Committee, University of Port Harcourt Teaching Hospital* [gracia.eke@uniport.edu.ng](mailto:gracia.eke@uniport.edu.ng)

**Background:** Breastfeeding is globally recognised as the most cost-effective preventive health intervention with countless health and economic benefits for children, mothers and the society at large. Despite the overwhelming evidence in favour of exclusive breastfeeding, with the persistently high Infant Mortality Rate, only 29% of infants under 6 months of age are exclusively breastfed in Nigeria, against the World Health Assembly's target of 50% by 2025 and 28% are breastfed up to 2 years of age.

**Objectives:** Engaging all stakeholders, including the NMA, to prioritise breastfeeding in all programmes aimed at improving maternal and child health

**Methods:** A desk review of breastfeeding and its NMA-related roles

**Results:** Despite these potential breastfeeding benefits, and National policies promoting optimal infants and young child feeding practices, the burden of under-five deaths and malnutrition remain high with persistently poor breastfeeding indices. Creating sustainable breastfeeding support systems encouraged breastfeeding normalcy; improved access to skilled breastfeeding counseling and support, driving a behavioural change towards optimal infant and young child feeding practices. These highlight the need to respond to the Nigerian Ministry of Health's Call to Action to engage stakeholders to promote, protect and support breastfeeding, in health facilities, communities and the workplace.

**Conclusion:** NMA should be repositioned to prioritise breastfeeding and ensure its support is embedded in every layer of society, contributing to improved maternal and child health and enhanced overall public health in the State.

**Keywords:** Nigerian Medical Association, NMA, Breastfeeding, Rivers State, Nigeria

## Abstract

NMA2025/T1/009

# Paediatric Trauma in Port Harcourt: A Hospital Based study

Dabota Yvonne Buowari

**Corresponding author:** Dabota Yvonne Buowari, *Department of Emergency Medicine, University of Port Harcourt Teaching Hospital, Port Harcourt, Nigeria/Medical Women's Association of Nigeria.* [dabolabuowari@yahoo.com](mailto:dabolabuowari@yahoo.com)

**Background:** Trauma is a major cause of preventable morbidity and mortality in children in developing countries, including Nigeria. The cause of injury in children may be intentional or unintentional. This study aims to investigate the pattern and outcome of trauma in children aged 1-17 years in a Nigerian tertiary hospital.

**Method:** This is a 32-month prospective cross-sectional study conducted at the Emergency Medicine Department (ED) of the University of Port Harcourt Teaching Hospital from July 2022 to February 2025.

**Result:** Three hundred and eighty children were recruited into the study, with 222(58.4%) males, 158 (41.6%) females and 153 (40.3%) were aged 6-12 years. The children were involved in a wide range of activities before the activity that led to the injury. The commonest mechanism of injury was road traffic accident, 203 (53.4%), and falls from height, 66(17.3%). Most of the children were 283 (80.6%) conscious at the time of presentation, while 29(7.6%) were brought in dead.

**Conclusion:** The causes of the children's deaths were all preventable. Boys were more trauma victims than girls. Most of the trauma was caused by road traffic crashes, which means the children were not properly supervised by an adult. This also extends to children falling from height, especially from the balconies of the Storey buildings. Child social services should be strengthened to reduce the burden, morbidity and mortality caused by road traffic accidents.

**Key Words:** Trauma, children, accident, injury, Port Harcourt

## Abstract

NMA2025/T1/011

### Clinical Epidemiology-Based Lifestyle Medicine Interventions in Primary Healthcare Centres, Rivers State, Nigeria

Nduye C T. Briggs, Ifeoma C. Nwadiuto, Ositadinma M. Pius, Inye A. Abo

**Corresponding author:** Nwadiuto IC, *Primary Health Care Department, Port Harcourt City Local Government, Port Harcourt, Nigeria* [ifeoma.nwadiuto@ust.edu.ng](mailto:ifeoma.nwadiuto@ust.edu.ng)

**Background:** The burden of non-communicable diseases (NCDs) linked to unhealthy lifestyles is increasing in Nigeria, particularly in urbanizing regions like Rivers State. Lifestyle medicine, guided by clinical epidemiology, provides a strategic framework for disease prevention and management in primary healthcare centres (PHCs).

**Objective:** To assess the application and effectiveness of lifestyle medicine interventions—grounded in clinical epidemiology principles—for NCD prevention and control in PHCs in Rivers State.

**Methods:** A mixed-method design was adopted. Quantitative data were retrospectively extracted from 2,160 patient records across 10 PHCs, including prevalence and outcome indicators for hypertension, obesity, and diabetes between 2020 and 2022. Qualitative data were obtained through key informant interviews with 64 healthcare providers. Interventions assessed included dietary counselling, exercise promotion, and smoking cessation support.

**Results:** Structured lifestyle interventions improved glycaemic control in 30% of diabetic patients and reduced systolic blood pressure by 15–20% among hypertensives. However, only 40% of patients adhered to physical activity guidelines. Providers identified limited resources and patient non-compliance as key barriers.

**Conclusion:** Integrating lifestyle medicine through a clinical epidemiology lens enhances NCD management at the PHC level in Rivers State. Sustained improvement will require support from the health system and enhanced patient education.

**Keywords:** Clinical epidemiology; lifestyle medicine; non-communicable diseases; primary health care; Rivers State.

## Abstract

NMA2025/T1/013

### The Cost of Care of Childhood Epilepsy in Southern Nigeria: Experience from a Tertiary Hospital in Port Harcourt.

Kininyiruchi N.Wobo

**Corresponding author:** Kininyiruchi N.Wobo, *Department of Paediatrics, University of Port Harcourt Teaching Hospital.* [ngabrieljob2014@gmail.com](mailto:ngabrieljob2014@gmail.com)

**Objectives:** The financial burden of caring for a child living with epilepsy and its effect on the family's quality of life is understudied. This study aimed to determine the cost of care for children with Epilepsy in Port Harcourt.

**Method:** Study participants were 37 children with epilepsy and their parents or caregivers who were consecutively recruited using a convenience sampling method. The patient must be on anti-seizure medication for at least 1 year to be eligible to participate. An interviewer-administered semi-structured questionnaire was used to obtain information on the socio-demographic, estimates of the financial costs of epilepsy care, and the effect of caregiving on caregiver productivity and income. SPSS version 25 was used for analysis.

**Result:** The average monthly income per family was \$332.80 ± \$116.82. The majority, 32 (86.5%), financed epilepsy care through out-of-pocket payments. The average cost of epilepsy care was \$66 per month (\$792 annually), which accounts for 20% of the average family income. There was a negative correlation between hours spent on caregiving and household income ( $\rho = -0.288$ ;  $p\text{-value} = 0.084$ ). About 67.6% of caregivers consider their overall well-being negatively affected by having a child with epilepsy.

**Conclusion:** The cost of care for childhood epilepsy in southern Nigeria is high and takes up a significant proportion of household income. Concerted efforts need to be made to subscribe to health insurance to alleviate the financial burdens on families.

**Keywords:** Childhood Epilepsy; Cost of health care; Southern Nigeria; Port Harcourt

## Abstract

NMA2025/T2/001

### *In-Vivo* and *In-Vitro* Adsorption of Heavy Metals by Nanoparticles of Corn Cob

Basi-Ledee Bridget

**Corresponding author:** Basi-Ledee Bridget, *Africa Centre for Excellence for Public Health and Toxicological Research.*  
[Blinkybridget@gmail.com](mailto:Blinkybridget@gmail.com)

**Background:** Heavy metals are high-density metallic elements known for their toxicity even at low concentrations. Increasing environmental contamination Because these metals are released in high amounts more than their critical quantities into the environment, they exert severe toxicity, adverse impacts on living creatures, environmental receptors and human vigour by accumulation in the food chain. *In-vivo* and *in-vitro* adsorption of heavy metals explores the utilization of corn cob-derived silica nanoparticles as an effective and sustainable adsorbent for the adsorption of heavy metals. Given the persistent and toxic nature of heavy metals, traditional treatment methods often fall short in terms of cost and efficiency, particularly at low concentrations. This research aims to synthesize silica nanoparticles of corn cob, leveraging agricultural waste. The present study therefore conducted *in-vivo* assessments of heavy metal bioavailability and accumulation in animal models, evaluated changes in antioxidant levels and malondialdehyde (MDA) concentrations in biological tissues after metal exposure and performed *in-vitro* analyses to evaluate the efficiency of silica nanoparticles in adsorbing Mn, Ni, and Al. Through rigorous batch adsorption experiments and subsequent analysis of metal ion concentrations via atomic absorption spectroscopy (AAS), the study investigates the bioaccumulation patterns of heavy metals—nickel, manganese, and aluminium—in the heart, pancreas, and reproductive tissues of male and female rats exposed to both heavy metal mixtures and individual metals, while exploring the adsorption capacity for heavy metals by silica nanoparticles of corn cob *in-vivo* and *in-vitro*

**Keywords:** Heavy metals, Corn cob, Nanoparticles, Adsorption

## Abstract

NMA2025/T2/003

### Barriers and Facilitators of Uptake of Telemedicine at Three Air Force Formations Across Nigeria: A Mixed Methods Study

Osagie Kenneth Cole, Daprim Samuel Ogaji, Daniel Ekpah

**Corresponding author:** Osagie Kenneth Cole, Directorate of Clinical Services, Medical Services Branch, Nigerian Air Force. [osagiecole@gmail.com](mailto:osagiecole@gmail.com); +2348023290012



**Background:** Telemedicine offers a promising avenue for improving healthcare delivery, especially for military personnel who face unique challenges in accessing in-person medical care. Despite the introduction of telemedicine services in three Nigerian Air Force formations, uptake has been suboptimal. This study aimed to assess the barriers and facilitators influencing the utilization of telemedicine within these pilot sites.

**Methods:** A sequential explanatory mixed methods design was employed. Quantitative data were collected using a pretested semi-structured questionnaire and analyzed with SPSS version 25. Qualitative data were gathered through in-depth interviews guided by a thematic analysis framework. Participants included both patients and healthcare providers, selected via multi-stage sampling techniques.

**Results:** A total of 422 participants were surveyed, including 181 (42.9%) healthcare workers. Although most respondents (85.8%) were aware of telemedicine services, they were not actively using them. Of those who had used telehealth, 40% reported their last usage was over six months prior. The most common facilitator of uptake was ease of access to healthcare services (33.3%). Barriers to use included preference for face-to-face consultations (12.8%), concerns about data privacy and security (44.5%), and a lack of immediate healthcare needs. Among healthcare providers, (54.8%) acknowledged that telemedicine enhanced clinical efficiency, though 53.6% raised concerns about technical issues.

**Conclusion:** Awareness of telemedicine exists among military personnel and healthcare workers, yet actual utilization remains low and infrequent. Key facilitators include convenience and perceived improvements in clinical efficiency. Major barriers include data privacy concerns, limited awareness of program benefits, and technical limitations. Addressing these challenges through targeted awareness campaigns, robust data protection measures, and provider training may enhance uptake and sustained use of telemedicine in military settings.

**Keywords:** Telemedicine, Barriers, Facilitators, Uptake, Air Force Formation, Nigeria

## Abstract

NMA2025/T2/006

# Readiness and Adoption of Digital Technology for Telehealth Monitoring among Frontline Health Workers in the Paediatrics Department of the University of Port Harcourt Teaching Hospital Ikechukwu E, Ifoegbu CC, Igwe NU, Ogaji DS

**Corresponding author:** Ikechukwu E, Department of Preventive & Social Medicine, University of Port Harcourt, Nigeria. [Emmanuel02ikechukwu@gmail.com](mailto:Emmanuel02ikechukwu@gmail.com); +2347046571847

**Background:** Digital health technologies can enhance healthcare delivery, particularly in resource-limited settings. However, their adoption among healthcare professionals in Nigeria remains inadequate. This study assessed the readiness and adoption of digital health technologies among frontline health workers in the Pediatrics Department of the University of Port Harcourt Teaching Hospital (UPTH).

**Methods:** A cross-sectional study was conducted among 385 healthcare workers selected through systematic sampling. Data were collected using a structured, interviewer-administered questionnaire adapted from the Technology Readiness Index (TRI 2.0), comprising 16 items across four dimensions: optimism, innovativeness, discomfort, and insecurity. Responses were rated on a five-point Likert scale. Participants were categorized into five digital readiness profiles: laggards (1.0–1.99), paranoids (2.0–2.49), skeptics (2.5–3.49), pioneers (3.5–3.99), and explorers (4.0–5.0). Descriptive and inferential analyses were performed with significance set at  $p \leq 0.05$ . Ethical approval was obtained from the UPTH Research Ethics Committee.

**Results:** The response rate was 31.2%. Most participants were female (70.7%), single (66.7%), had worked for 1–5 years (51.7%), and rated their digital skills as average (67.5%). Cronbach's alpha values indicated acceptable internal consistency (0.72–0.83). Mean scores for TRI dimensions were: optimism ( $4.07 \pm 1.00$ ), innovativeness ( $3.07 \pm 1.29$ ), discomfort ( $2.61 \pm 1.19$ ), insecurity ( $3.47 \pm 1.22$ ), with an overall TRI score of  $3.27 \pm 0.13$ . Based on TRI segmentation, 93.3% were classified as skeptics, and only 6.7% as pioneers.

**Conclusion:** Despite a generally positive attitude towards digital technology for remote health monitoring, readiness for adoption remains low. Enhancing digital competence among health workers through training, improving technology usability, and fostering institutional support are critical to strengthening digital health integration in tertiary healthcare settings in Nigeria.

**Keywords:** Health technology readiness, technology adoption, digital health, paediatrics healthcare, TRI 2.0, Nigeria, health systems strengthening

Abstract

NMA2025/T2/007

## Perceptions, Acceptance, and Adoption of Technology-Enhanced Maternal Health Monitoring Among Pregnant Women Attending Antenatal Care in a Teaching Hospital

Deekae LR, Denebari DL, Dick HC Ogaji DS

**Corresponding author:** Deekae LR, Department of Preventive & Social Medicine, University of Port Harcourt, Nigeria.  
[Drulphbrachael@gmail.com](mailto:Drulphbrachael@gmail.com); +2349029888871

**Background:** Digital technologies hold promises for improving maternal health outcomes and reducing maternal and neonatal mortality through enhanced service delivery. However, the readiness of antenatal clients in Nigeria to adopt digital technology-enhanced remote health monitoring remains underexplored. Guided by the Technology Readiness and Acceptance Model (TRAM) and Social Cognitive Theory (SCT), this study assessed antenatal clients' perceptions and readiness for digital health adoption.

**Methods:** A cross-sectional survey of 228 antenatal clients was conducted using systematic sampling. Participants completed the 16-item Technology Readiness Index (TRI 2.0) and perception scales on 5-point Likert scales. Based on TRI scores, respondents were categorised as explorers, pioneers, skeptics, paranoids, or laggards. Internal consistency was strong (Cronbach's alpha: .80–.92). Data were analysed using SPSS version 29, with descriptive and generalized linear regression, and significance set at  $p \leq 0.05$ .

**Results:** The response rate was 100%. Most participants were aged 25–34 (43.9%), married (51.8%), and held tertiary education (38.6%). Reported digital device proficiency was low: smartwatches (6.1%), smartphones (25.9%), and computers (26.3%). E-prescriptions ( $3.09 \pm 1.11$ ) and access to personal health information ( $3.08 \pm 1.13$ ) were top-ranked benefits. Scores on the behavioural traits to technology adoption were optimism ( $3.1 \pm 0.9$ ), innovativeness ( $3.2 \pm 1.0$ ), discomfort ( $3.1 \pm 1.0$ ), insecurity ( $3.2 \pm 1.0$ ) and overall TRI ( $3.0 \pm 0.3$ ). The majority of the pregnant women were skeptics (90.4%), while the rest were paranoids (3.5%), pioneers (4.4%) and explorers (1.8%). Employment status significantly influenced readiness as unemployed clients were less likely to accept remote monitoring apps ( $B = -.13$ , 95% CI:  $-.24$  to  $-0.01$ ,  $p = 0.033$ ).

**Conclusion:** Despite global trends in digital maternal health, Nigerian antenatal clients exhibit low engagement and high skepticism. Targeted interventions—such as digital literacy initiatives, privacy assurance, and infrastructural improvements—are essential for equitable adoption.

**Keywords:** Digital technology, remote healthcare, antenatal care, technology readiness index, TRI, tertiary hospital, Nigeria

Abstract

NMA2025/T2/009

## Knowledge Attitude and Practice Regarding Antibiotic Abuse Among Students at Pamo University of Medical Sciences in Rivers State, Nigeria

Blessing T. Jonathan, Lawrence Favour, Mercy I. Nelson, Lily O. Nnamdi, Vivian I. Ogbonna

**Corresponding author:** Blessing T. Jonathan, Department of Community Medicine, PAMO University of Medical Sciences, Rivers State, Nigeria. [jonathanblessingtams@gmail.com](mailto:jonathanblessingtams@gmail.com); +2349019667908

**Background:** Antibiotic abuse is a global burden which has led to a plethora of difficulties, including increased emergence of acquired multidrug resistance, being the most significant burden, inadequate therapeutic outcome or failure, increased incidence of adverse drug reactions and many more. The study evaluated the knowledge, attitude, practices/prevalence of antibiotics abuse among medical students at Pamo University, Oyiabo, Port-Harcourt.

**Methodology:** A cross-sectional study design was adopted, and a multi-stage sampling technique was used to select 413 eligible participants for this study. Data was collected using a semi-structured questionnaire and analysed using IBM SPSS version 27, and the findings were presented in frequency tables with percentages.

**Results:** The majority of the participants were females, 326(78.9%), Christians, 408(98.8%) and mainly from the faculty of clinical sciences, department of medicine and surgery, 331(80.1). 81.4 % (336) of participants had good knowledge of antibiotic abuse, and 273 (66.1%) of participants had a good attitude against antibiotic abuse. However, only 13.1% had good practices against antibiotic abuse. Participant's status was statistically significantly associated with level of knowledge and attitude on Antibiotics Abuse, Department was associated considerably with Knowledge of antibiotic abuse ( $\chi^2 = 3.844$ ;  $p \leq 0.050$ ) and Age was significantly associated with the attitude on Antibiotic abuse ( $\chi^2 = p \leq 0.019$ ) however, there was no statistically significant association between participant's status and Practices of Antibiotics abuse.

**Conclusion:** The study showed a high level of good knowledge of Antibiotic abuse; more than half of the participants had a good attitude against antibiotic abuse. Findings from this study showed a very high prevalence of antibiotic abuse, recorded as 96.9%. To prevent the grave consequences that follow antibiotic abuse, we encourage health workers on campus to adopt good antimicrobial stewardship practices, including promoting the completion of full antibiotic courses as prescribed.

**Keywords:** Antibiotics, Antibiotics abuse, Knowledge, Attitude, Practices.

## Abstract

NMA2025/T2/010

# Primary Healthcare Workers Perception, Acceptance and Utilization of Technology-Enhanced Remote Monitoring Devices in Obio-Akpo and Port-Harcourt Local Government Areas

Ebimoghlan EO, Ejenakewe O, Ekee OA Ogaji DS

**Corresponding author:** Ekee OA, Department of Preventive & Social Medicine, University of Port Harcourt, Nigeria.  
[ekoomangbene@gmail.com](mailto:ekoomangbene@gmail.com); +2349061166584

**Background:** The integration of technology-enhanced processes particularly remote patient monitoring devices into healthcare can improve service delivery, data management, and health outcomes. However, the perception, acceptance and readiness to use these technologies by primary healthcare workers (PHCWs) remain critical for successful adoption. This study assessed these factors among PHCWs in Obio-Akpor and Port Harcourt Local Government Areas, Rivers State, Nigeria.

**Methodology:** A descriptive cross-sectional study was conducted among 183 PHCWs in selected primary healthcare facilities. Data were collected using the 16-item Technology Readiness Index (TRI 2.0), comprising optimism, innovativeness, discomfort, and insecurity subscales (Cronbach's alpha: 0.74–0.94). Descriptive statistics summarized sociodemographic characteristics and levels of perception, acceptance, readiness, and utilization of technology-enhanced processes. Generalised linear and logistic regression analyses were used to assess associations, with statistical significance set at  $p \leq 0.05$ .

**Results:** Most respondents were aged 25–35 years (38.2%), female (79.4%), and Community Health Practitioners (29.1%). Good perception (66.5%), high acceptance (62.2%), moderate readiness (53.2%), and moderate utilization (58.5%) of technology-enhanced processes were reported. Significant associations were found between perception and gender ( $p = 0.010$ ), age group ( $p = 0.013$ ), and educational level ( $p = 0.001$ ). Acceptance was associated with occupation ( $p = 0.002$ ); readiness with educational level ( $p = 0.047$ ) and occupation ( $p = 0.005$ ); and utilization with age ( $p = 0.028$ ), gender ( $p = 0.024$ ), and education ( $p = 0.009$ ). Based on the TRI segmentation, most of the PHCWs were skeptics (86.1%) while others were pioneers (7.3%), paranoids (4.2%), and explorers (2.4%).

**Conclusion:** PHCWs in Rivers State demonstrated generally positive perceptions and acceptance of technology-enhanced processes, though readiness and utilization remain moderate. Sociodemographic factors significantly influenced outcomes. Targeted training and improved digital infrastructure are recommended to support wider adoption in primary healthcare

**Keywords:** Perception, acceptance, utilization, technology-enhanced process, primary healthcare workers



## Readiness for Adoption of Electronic Health Management Information System among Providers in Private Health Facilities in Port Harcourt

Gbule CM, Ewonubari FJ, Ibe SC, Ogaji DS

**Corresponding author:** Gbule CM, Department of Preventive & Social Medicine, University of Port Harcourt, Nigeria. [dr.chizigbule2001@gmail.com](mailto:dr.chizigbule2001@gmail.com); +2347085567002

**Background:** The implementation of Health Management Information Systems (HMIS) is transforming healthcare globally. However, adoption in low- and middle-income countries, particularly within Nigeria's private health sector, remains limited. This study assessed the readiness of healthcare providers in private facilities in Port Harcourt to adopt electronic HMIS.

**Methods:** A descriptive cross-sectional study was conducted among 143 private healthcare providers in Port Harcourt and Obio/Akpor LGAs using a structured questionnaire. The Technology Readiness Index (TRI) was used to evaluate four dimensions: optimism, innovativeness, discomfort, and insecurity. Respondents were categorized based on TRI scores into laggards, paranoids, skeptics, pioneers, and explorers. Data were analyzed using descriptive statistics and chi-square tests, with significance set at  $p < 0.05$ .

**Results:** The response rate was 97.9%. Most respondents were aged 25–34 years (34.3%), female (57.1%), married (62.9%), and doctors (56.4%). The majority rated their digital skills as average (79.3%) and reported access to smartphones (92.9%), computers (89.3%), and EMR systems (57.9%). Proficiency was highest with EMR use (27.1%), followed by electronic billing (18.6%), remote monitoring (15.0%), and clinical decision support (14.3%). TRI subscale scores were: optimism ( $4.07 \pm 0.85$ ), innovativeness ( $3.09 \pm 0.85$ ), discomfort ( $2.31 \pm 0.83$ ), and insecurity ( $3.07 \pm 0.99$ ), with an overall TRI score of  $3.44 \pm 0.52$ . TRI profiles showed 2.1% as paranoids, 51.4% skeptics, 30.7% pioneers, and 15.7% explorers. Readiness to adopt HMIS was significantly associated with cadre of the staff ( $p=0.002$ ), qualification ( $p=0.003$ ), and self-rated digital skills ( $p=0.001$ ).

**Conclusion:** While private healthcare providers in Port Harcourt exhibit moderate readiness to adopt electronic HMIS, barriers such as limited infrastructure, low digital proficiency, and psychological resistance persist. Strategic interventions including targeted training, infrastructure investment, and supportive policies are critical for enhancing HMIS adoption in the private health sector.

**Keywords:** Readiness, Health Information Technology, Technology Adoption, Private Healthcare, Port Harcourt

## Perception, Acceptance and Utilization of Technological Enhanced Processes Among Tertiary Healthcare Workers in University of Port-Harcourt Teaching Hospital

Elakpa JE, Fadero MJ, Francis BF, Ogaji DS

**Corresponding author:** Elakpa JE, Department of Preventive & Social Medicine, University of Port Harcourt, Nigeria. [ehjoseph4@gmail.com](mailto:ehjoseph4@gmail.com); +2348130591732

**Background:** Technology Enhanced Processes (TEPs) involves the use of technology to improve or automate various activities or operations, thereby making them more efficient, accessible and effective. This study set out to assess the perception, acceptance, and utilization of Technology Enhanced Processes among tertiary healthcare workers in the University of Port Harcourt Teaching Hospital (UPTH).

**Materials and Methods:** A descriptive cross-sectional study design with a convenient sampling method was employed and a self-administered 16-item Technology Readiness Index (TRI 2.0) structured questionnaire was used to collect information from 330 tertiary healthcare workers in UPTH. TRI conceptualises behavioural traits for adopting new technology as a function of optimism, innovativeness, discomfort and insecurity. TRI 2.0 is valid for assessing technology

diffusion with structured characteristic patterns – explorers (early adopters), pioneers (open to new tech), skeptics (cautious), paranoids (distrust tech) and laggards (resist new tech). Data was analysed using the Statistical Package for Social Sciences (SPSS) IBM version 26 and significance set at  $p \leq 0.05$ .

**Results:** More of the respondents were between the age range of 25 and 44 years (67.8%), predominantly females (69.4%) and married (55.8%). There were more doctors (41.5%) and nurses or midwives (41.2%) among the participants. 302 (91.5%) believe TEPs can improve patient health outcomes. Also 263 (79.9%) believe technology can enhance patient provider relationship. Mean TRI scores: optimism ( $4.0 \pm 0.8$ ), innovativeness ( $3.1 \pm 0.9$ ), discomfort ( $2.4 \pm 0.9$ ), insecurity ( $3.4 \pm 0.9$ ), TRI ( $3.2 \pm 0.5$ ). Most staff were skeptics (66.1%) while others were pioneers (23.0%), explorers (5.8%), paranoids (3.9%) and laggards (1.2%).

**Conclusion:** Based on the research and findings of this study, a majority viewed TEPs as highly beneficial and were very likely to adopt TEPs if available. Although this study confirms that UPTH healthcare workers recognize TEPs benefits it isn't devoid of barriers ranging from training, infrastructure to policy making.

**Keywords:** Perception, acceptance, utilization, technology-enhanced process, tertiary healthcare workers, UPTH, University of Port Harcourt Teaching Hospital.

## Abstract

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# Risk Assessment of Potential Toxic Metals (Ptms) in Water, Soil, Vegetables, and Human Urine Samples in Tin Mining Sites of Jos Plateau State, Nigeria.

Fale Timothy Titus

**Corresponding author:** Fale T. Titus, Department of Environmental Petroleum Toxicology, *Africa Centre for Excellence for Public Health and Toxicological Research*. [timothyfale@gmail.com](mailto:timothyfale@gmail.com) +2348062793101.

**Background:** This study investigates the concentration of heavy metals in various environmental matrices from selected tin mining sites in Jos Plateau State, Nigeria in water, vegetables, soil, and human urine.

**Methods:** Assessment of contamination levels, compare them with global permissible limits, and evaluation of the potential human and ecological risks was conducted in water samples, heavy metals such as antimony, tin, arsenic, cadmium, and lead were analyzed.

**Results:** The results revealed significant variability across locations. For instance, Katako had the highest concentration of arsenic ( $0.04 \pm 0.00$  mg/L), while Bukuru recorded the highest for lead ( $0.04 \pm 0.01$  mg/L). All values exceeded the WHO permissible limit for arsenic (0.01 mg/L) and cadmium (0.003 mg/L), signaling potential health risks for local populations who rely on these water sources. The analysis of vegetables showed elevated concentrations of arsenic and cadmium. Vegetables from Rayfield exhibited arsenic levels as high as  $0.09 \pm 0.01$  mg/L, far surpassing the permissible limit for arsenic in food (0.01 mg/L). This suggests that food contamination could pose direct health risks to consumers, especially vulnerable groups such as children and pregnant women. Soil samples also displayed high concentrations of heavy metals, with Rayfield having  $0.06 \pm 0.01$  mg/L of cadmium, highlighting soil contamination from mining activities. This could severely affect local agriculture, with potential long-term consequences for the food chain and ecosystem. In human urine samples, significant concentrations of heavy metals such as lead and arsenic were observed in areas like Katako and Angle D. Lead concentrations in urine reached  $0.08 \pm 0.00$  mg/L, exceeding the WHO permissible limit of 0.01 mg/L. This indicates a potential for bioaccumulation of toxic metals in the local population, raising concerns about chronic exposure and its associated health risks, including neurological and renal effects. An ecological risk assessment revealed that elevated heavy metal concentrations in the environment could lead to significant disruptions in local biodiversity and ecosystem health.

**Conclusion:** These findings underscore the urgent need for environmental remediation and stricter regulations to reduce heavy metal pollution in mining areas. Immediate intervention is necessary to mitigate the adverse effects on both public health and the environment.

**Keywords:** Toxic metals, risk assessment, water, soil, vegetables, human urine, tin mining, Jos, Plateau State, Nigeria