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TABLE OF CONTENTS

GENERAL INFORMATION	IC
INFORMATION FOR AUTHORS	1F
EDITORIAL NOTE:	
Energy Drinks and Their Hidden Dangers: A Call for Awareness and Regulation – G. E. Erhabor	491
<b>ORIGINAL ARTICLES</b>	
<b>Histopathologic Characteristics of Childhood Nephrotic Syndrome in a Tertiary Health Facility in Nigeria</b>	493
O. T. Adedoyin, M. O. Buhari, O. R. Ibrahim, O. O. Oyedepo, O. A. M. Adesiyun, A. Alege	
<b>Effect of Exercise Versus Metformin among Nigerians with Prediabetes: A Randomised Controlled Trial</b>	499
M. T. Umar, A. A. Sabir, K. B. Sada, H. Umar, A. S. Maiyaki, A. K. Jimoh, U. F. Abdullahi	
<b>Patterns of Energy Drink Consumption and Perceived Benefits Among Medical Students in a Tertiary Institution in South-Eastern Nigeria</b>	505
S. I. Ezemenahi, C. C. Ibeh, R. U. Alphonsus, E. Akalugwu, S. C. Ezemenahi, B. E. Ezemenahi, A. L. Obi Nwosu, A. N. Alabi	
<b>Diagnostic Efficiency of Point-Of-Care Lung Ultrasonography in the Diagnosis of Adult Community-Acquired Pneumonia – A Single-Centre Study in Southeastern Nigeria</b>	515
C. O. U. Eke, G. C. Mbata, P. U. Ele, E. G. Okwudire, J. U. Ugwoegbu	
<b>Comparative Evaluation of Total Antioxidant Capacity and pH of Saliva in Children with and without Early Childhood Caries</b>	524
A. Abe, F. A. Oredugba, O. O. Orenuga, A. A. Osuntoki	
<b>Prevalence and Factors Associated with Fear of Falling in the Elderly Attending a Tertiary Hospital in South-South Nigeria</b>	534
U. C. Oguzor, S. S. Uriah, C. T. Atata, A. A. Alali, P. O. Dienye	
<b>Predictors of COVID-19 Vaccine Uptake in a Tertiary Hospital Community, North Central, Nigeria</b>	542
D. A. Daniel, N. A. Akwaras, N. L. P. De-kaa, C. Nwaeze, L. T. Swende, B. O. Ornguga	
<b>Diagnostic Accuracy of Mammographic Findings in Patients 35 Years and Older Presenting with Palpable Breast Lump in University of Benin Teaching Hospital, Benin City</b>	548
S. Oriakhi, N. J. Nwashilli, C. E. Ohanaka, O. D. Osifo	
<b>Plasma Vitamin D Levels Among Nigerian Mothers and their Preterm Infants</b>	555
V. A. Ayeni, T. A. Ogunlesi, I. O. F. Dedeke, O. O. Olawale, D. M. Olanrewaju	
<b>Neutrophil-Lymphocyte Ratio and High Sensitivity C-Reactive Protein as Markers of Heart Failure Severity: A Study at the University of Port-Harcourt Teaching Hospital Heart Failure Clinic</b>	562
A. O. Ajala, Sotonye Dodiya-Manuel, Boma Oyan, Jacquelin Ejituwu, Maclean Akpa	
<b>Spectrum of Skin Diseases among Inmates in a Nigerian Correctional Centre in Southern Nigeria</b>	568
O. G. Egbi, D. A. Aladeh, R. Madubuko, J. D. Okpiri, T. Ujah, M. Mamven, O. A. Adejumo, I. R. Edeki, D. S. Oyedepo, S. O. Oiwoh, V. O. Ndu, O. A. Osunbor	
<b>Oral Health Knowledge, Practices, and Dental Complaints among Pregnant Women Attending Antenatal Clinic at a Tertiary Health Institution, North Central, Nigeria</b>	575
L.T. Swende, N. A. Akwaras, B. O. Ornguga, S. I. Nwaeze, J. O. Abah, A. Ngwibete, T. Z. Swende, I. Tor- Anyiin, G. N. Rimamnunra, N. L. P De-kaa, D. A. Daniel, J. O. Obekpa, M. Ben-Ameh, C. U. Ugboaja	
<b>Rural-Urban Differences in Risk Factors for Prediabetes and Undiagnosed Diabetes Among Adult Dwellers in Selected Yoruba-Speaking Parts of Nigeria: A Glycated Haemoglobin-Based Population Screening</b>	583
W. O. Balogun, J. O. Akinyemi, I. O. Ajayi, M. A. Olamoyegun, O. B. Olopade, O. A. Bolarinwa, B. W. Alatishe-Muhammad, O. A. Salisu, G. O. Ajani, D. O. Soyoye	
<b>Pre- and Post-Prostatectomy Detrusor Wall Thickness and the Symptom Profile in Patients with Benign Prostatic Enlargement: A Prospective Review</b>	592
C. I. Onyeze, T. A. Badmus, A. A. Salako, N. S. Onyeze, C. M. Asaleye, E. A. Agbakwuru, E. A. Jeje, O. O. Olasehinde, M. C. Igbokwe, R. N. Babalola, R. A. David	
<b>Audit of School Oral Health Promotion Activities and Association with Oral Health Behaviour of Adolescents in Ibadan, Nigeria</b>	597
F. B. Lawal and G. A. Oke	
<b>The Respiratory Effects of Chronic Exposure to Gas Faring Among Residents of Some Communities in the Niger Delta Region of Nigeria</b>	606
E. M. Ekwere, I. U. Umoh, G. E. Peters, A. I. Udo, A. E. Effiong, E. J. Peters, E. A. Bandele	
<b>INDEX TO VOLUME 41, NO. 5, 2024</b>	
Author Index	613
Subject Index	614



### Rural-Urban Differences in Risk Factors for Prediabetes and Undiagnosed Diabetes Among Adult Dwellers in Selected Yoruba-Speaking Parts of Nigeria: A Glycated Haemoglobin-Based Population Screening

*Différences Rurales-Urbaines des Facteurs de Risque du Prédiabète et du Diabète Non Diagnostiqué Chez les Adultes Habitants Certaines Régions Yoruba-Parlantes du Nigeria: Un Dépistage Populationnel Basé sur l'Hémoglobine Glyquée*

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#### ABSTRACT

**BACKGROUND AND OBJECTIVES:** Prevalence of prediabetes and undiagnosed diabetes are different in rural and urban dwellings, with varying driving factors. This study aimed to determine the differences in risk factors of prediabetes and undiagnosed diabetes among Yoruba-speaking adult dwellers in selected rural and urban communities in Nigeria using haemoglobin A1c.

**METHODS:** A cross-sectional study was conducted in five selected states in Southwestern Nigeria. Using a multistage sampling technique, 2,537 participants with no prior diagnosis of prediabetes or diabetes mellitus (DM) were enrolled and their glycated haemoglobin (HbA1c) determined. Descriptive statistics, univariate and multiple logistic regression analysis was used to determine the prevalence and risk factors of prediabetes and diabetes at 5% level of significance.

**RESULTS:** Increased age, sex, family history of diabetes, being married, participants' history of hypertension, cardiovascular disease and Gestational Diabetes Mellitus (GDM) or delivery of big babies, BMI, systolic and diastolic blood pressure were significantly associated with prediabetes and diabetes in both urban and rural areas. However, adjusted odds ratio showed that family history of diabetes (2.14, 95% CI: 1.26-3.61 versus 1.36, 95% CI: 1.00-1.85) and past GDM among women (2.67, 95% CI: 0.62, 11.39 versus 1.32, 95% CI: 0.61, 2.89) clearly predict dysglycaemia in the rural compared to urban participants, respectively.

**CONCLUSIONS:** Family history of diabetes and past GDM disproportionately predict dysglycaemia in rural compared to urban participants. Periodic screening for dysglycaemia and public health education, especially in child-bearing women, are necessary measures to reduce the burden of dysglycaemia in Nigeria.

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**KEYWORDS:** prediabetes, undiagnosed diabetes, risk factors, rural-urban, differences, glycated haemoglobin-based, Nigeria

#### RÉSUMÉ

**CONTEXTE ET OBJECTIFS:** La prévalence du prédiabète et du diabète non diagnostiqué diffère entre les zones rurales et urbaines, avec des facteurs déterminants variés. Cette étude visait à déterminer les différences dans les facteurs de risque du prédiabète et du diabète non diagnostiqué chez les adultes yoruba-parlants vivant dans des communautés rurales et urbaines sélectionnées au Nigeria, en utilisant l'hémoglobine A1c.

**MÉTHODES:** Une étude transversale a été menée dans cinq États sélectionnés du sud-ouest du Nigeria. Utilisant une échantillonnage en plusieurs étapes, 2 537 participants sans diagnostic antérieur de prédiabète ou de diabète sucré (DS) ont été recrutés et leur hémoglobine glyquée (HbA1c) déterminée. Des statistiques descriptives, ainsi que des analyses de régression logistique univariée et multivariée, ont été utilisées pour déterminer la prévalence et les facteurs de risque du prédiabète et du diabète à un seuil de signification de 5 %.

**RÉSULTATS:** L'augmentation de l'âge, le sexe, les antécédents familiaux de diabète, le mariage, les antécédents d'hypertension, de maladie cardiovasculaire et de diabète gestationnel (DG) ou l'accouchement de gros bébés, l'IMC, la pression artérielle systolique et diastolique étaient significativement associés au prédiabète et au diabète dans les zones urbaines et rurales. Cependant, les odds ratio ajustés ont montré que les antécédents familiaux de diabète (2,14, IC à 95 % : 1,26-3,61 contre 1,36, IC à 95 % : 1,00-1,85) et les antécédents de DG chez les femmes (2,67, IC à 95 % : 0,62, 11,39 contre 1,32, IC à 95 % : 0,61, 2,89) prédisent clairement la dysglycémie en milieu rural par rapport aux participants urbains, respectivement.

**CONCLUSIONS:** Les antécédents familiaux de diabète et les antécédents de DG prédisent de manière disproportionnée la dysglycémie en milieu rural par rapport au milieu urbain. Un dépistage périodique de la dysglycémie et une éducation sanitaire, en particulier chez les femmes en âge de procréer, sont des mesures nécessaires pour réduire le fardeau de la dysglycémie au Nigeria. WAJM 2024; 41 (5): 583 - 591

**MOTS-CLÉS:** prédiabète, diabète non diagnostiqué, facteurs de risque, rural-urbain, différences, basé sur l'hémoglobine glyquée, Nigeria

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**List of abbreviations:** aOR: Adjusted Odds Ratio; BMI: Body Mass Index; CI: Confidence Interval; CVD: Cardiovascular Diseases; DM: Diabetes Mellitus; EDTA: Ethylenediamine Tetraacetic Acid; FBG: Fasting Blood Glucose; GDM: Gestational Diabetes Mellitus; HbA1c: Glycated Haemoglobin; IDF: International Diabetes Federation; LGAs: Local Governments Areas; NCDs: Noncommunicable Diseases; NHREC: National Health Research Ethics Committee of Nigeria; OGTT: Oral Glucose Tolerance Test; OR: Odds Ratio; RBG: Random Blood Glucose; REDCAP: Research Electronic Data Capture; SSA: Sub-Saharan Africa; WHO: World Health Organization