



Factors Influencing Early Weaning Practices among Nursing Mothers in Kano Municipal LGA: A Focus on Socio-Demographic and Psychological Aspects

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Abstract

Early weaning remains a critical public health issue, especially in low-resource settings, with significant implications for child health and development. This study explores the socio-demographic, economic, and psychological factors influencing early weaning practices among mothers in Kano Municipal LGA, Nigeria. Using a combination of stratified and simple random sampling, we surveyed mothers across diverse wards to ensure balanced representation of weaning and non-weaning practices. Findings reveal a strong correlation between socio-economic hardship, inadequate living conditions, and maternal stress with early weaning decisions, despite widespread recognition of breastfeeding's benefits. Economic pressures, insufficient family planning, and misconceptions surrounding milk supply often led mothers to substitute breastmilk with cow's milk and porridge, contributing to stunted growth and potential reductions in leptin levels for prematurely weaned infants. These results highlight the urgent need for targeted interventions addressing cultural, economic, and psychological barriers to breastfeeding. Prioritizing accessible education, socio-economic support, and maternal mental health resources could improve breastfeeding adherence, ultimately enhancing child health outcomes and supporting long-term public health goals.

Keywords: Breastfeeding; Early Weaning; Family Planning; Maternal Health; Breastmilk.

INTRODUCTION

Breast milk is the natural first nourishment for infants and is universally recommended for the first six months of life as the exclusive source of nutrition [1]. After six months, however, breast milk alone becomes insufficient to meet the growing needs of infants, necessitating the introduction of complementary foods [2]. Optimal complementary feeding could prevent up to 6% of child deaths in high-mortality countries and reduce under-five mortality by 13% through exclusive breastfeeding during the first six months [3]. In sub-Saharan Africa, breastfeeding is prevalent and often prolonged, with over 95% of infants breastfed exclusively in surveys from 34 countries since 1975, and a median cessation age greater than 18 months in data from 13 nations after 1990. While breastfeeding prevalence in some African nations decreased from 1975 to 1990 due to urbanization and increased female workforce participation, it has remained steady or increased in others [1]. In Nigeria, breastfeeding rates have declined, particularly in urban areas, where many mothers cite work commitments, lack of time, or concerns about physical changes as reasons for early weaning [4].

Weaning involves gradually replacing breast milk with other foods

Submitted: 10 October 2025 | **Accepted:** 12 December 2025 | **Published:** 13 December 2025

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Citation: Rabiu L, Aminu MA, Muhammad MI, Saliu MA, Sani NM et al. (2025) Factors Influencing Early Weaning Practices among Nursing Mothers in Kano Municipal LGA: A Focus on Socio-Demographic and Psychological Aspects. *SM Prev Med Public Health* 7: 6.

to ensure infants receive adequate nutrients [5]. Weaning typically progresses through three stages: in the first stage, infants rely mostly on breast milk with the gradual introduction of new foods; in the second, other foods increase while breast milk intake remains steady; and in the third, infants transition to household foods, marking the completion of weaning [6]. Insufficient breastfeeding and poor complementary feeding practices are well-documented in less developed regions, where only 25% of infants are exclusively breastfed for six months [7]. Various factors contribute to early weaning, including socioeconomic status, education, early introduction of formula, pacifier use, and maternal health issues [8]. Additionally, conditions such as maternal HIV/AIDS may discourage breastfeeding [9], and some mothers choose to wean early due to job demands or concerns about aging.

In Nigeria, there is limited scientific exploration of weaning practices and foods, and the dietary practices of infants remain largely unexamined. This study seeks to document weaning methods, influencing factors, and complementary foods for young children in Kano State, Nigeria, with implications for other African regions with similar dietary customs.

Early breastfeeding initiation may reduce neonatal mortality rates, as neonatal deaths make up 65.6% of infant mortality within the first 28 days, and UNICEF estimates indicate that breastfeeding could prevent 1.3 million deaths in children under five annually. Breastfeeding also offers maternal health benefits, including reduced anemia and lower risks of ovarian and breast cancers, as well as osteoporosis-related fractures [10]. Beyond health, breastfeeding strengthens the mother-child bond, fostering emotional security and self-confidence in children. Although studies on breastfeeding's role in disease prevention, including AIDS, are inconclusive, it is shown to significantly enhance child survival in sub-Saharan Africa [11].

Breastfeeding also supports environmental sustainability by reducing deforestation and pollution linked to dairy farming. Cattle production releases significant greenhouse gases and ammonia, which contribute to groundwater contamination, while formula production incurs additional resource costs. The WHO advocates effective breastfeeding practices to



extend exclusive breastfeeding to six months [1]. This study, therefore, seeks to explore mothers' experiences with breastfeeding and identify factors influencing early weaning.

MATERIALS AND METHODS

Study Design and Area

This descriptive cross-sectional study was conducted in Kano Municipal Local Government Area (LGA), one of seven metropolitan areas in Kano State, Nigeria. Kano Municipal is located in an urban region of Kano State, with its headquarters at Kofar Kudu, near the Emir's Palace in the southern part of the city. The LGA spans 17 km², comprising 13 wards, and is bordered by Nassarawa, Dala, Fagge, Kumbotso, Gwale, and Tarauni LGAs. This study aimed to investigate early weaning among breastfeeding mothers within this community, using questionnaires and interviews to collect data and gain insights into the mothers' perspectives.

Study Population and Sample Size

The study targeted nursing mothers in Kano Municipal LGA. According to the 2006 population census, Kano Municipal had 371,243 residents, with approximately 30% being nursing mothers, estimated at 111,373. Using a 2.47% annual growth rate, the population of nursing mothers in 2022 was projected to be 164,564. The sample size for the study was determined using Yamane's formula, yielding an estimated sample of 399 nursing mothers, which was rounded up to 403 to accommodate potential data collection issues.

Eligibility Criteria

Inclusion criteria comprised women of reproductive age with breastfeeding children undergoing weaning in KMC, while women below 20 years or without breastfeeding children were excluded.

Sampling Technique A combination of stratified and simple random sampling techniques was employed. Stratified sampling divided respondents based on weaning status (those who had already weaned and those who had not). To ensure balance, 201 participants were selected

from each category. The study covered all 13 wards in Kano Municipal LGA—Chedi, Dan'agundi, Gandun Albasa, Jakara, Kankarofi, Shahuchi, Sharada, Sheshe, Tudun Nufawa, Tudun Wazirchi, Yakasai, Zaitawa, and Zango as seen in Figure 1. Approximately 31 respondents were chosen per ward, representing both weaning and non-weaning mothers.

Simple random sampling was used within each stratum to ensure each mother had an equal chance of selection, thus achieving a representative sample from each group across the wards.

INSTRUMENTS AND PROCEDURES FOR DATA COLLECTION

Questionnaire

Data was collected using a standardized questionnaire administered to randomly selected respondents. The questionnaire contained both open-ended and closed-ended questions derived from the study's objectives, allowing for comprehensive data collection in a time- and cost-efficient manner. By gathering a broad range of data, potential biases were minimized, enhancing the reliability of findings.

Interview Guide

An interview guide was used to collect qualitative information from key informants, facilitating direct communication between the researcher and respondents. This approach provided first-hand insights and allowed for clarification on any points needing further explanation, ensuring the validity of qualitative data at its source.

Data Collection Procedure

To facilitate data collection, an introductory letter was obtained from the National Open University of Nigeria and presented to the Kano State Government for authorization. The questionnaires, developed with supervisory guidance, were pre-tested to ensure objectivity and relevance. Data collection took place within a two-week period, with questionnaires administered to the identified clusters at scheduled times. Upon collection, data was encoded, sorted, and prepared for analysis.

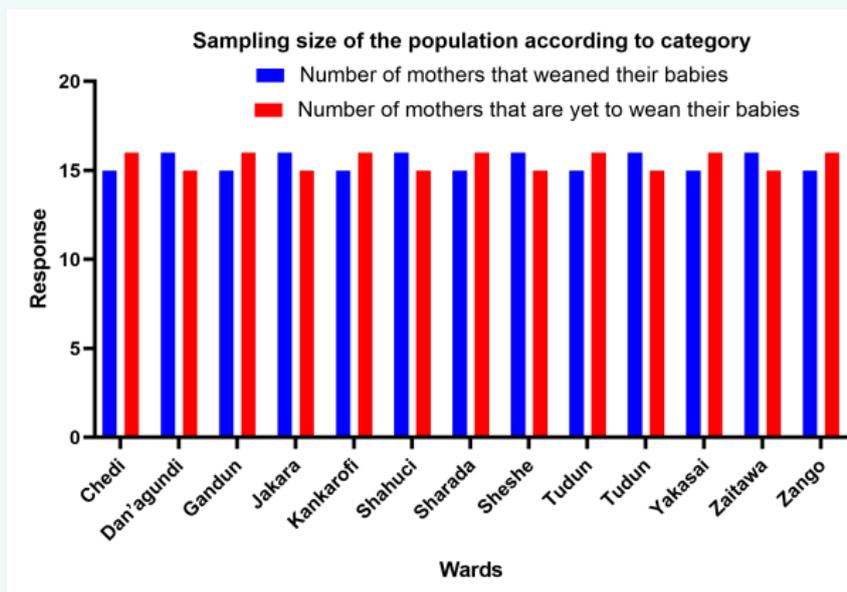


Figure 1: Showing the sampling size of the population according to category



Data Presentation and Analysis

Survey data was reviewed for quality assurance before being organized in Excel. Descriptive data was analyzed using univariate methods, including frequency counts and percentages, with visual representation of key findings through bar charts and other graphical formats. Data was processed in statistical software, ensuring alignment with the study's objectives.

Validity and Reliability of Instruments

The research instruments were validated through pre-testing and supervisor approval, confirming they were objective and specific to the study's requirements. Feedback from the pilot test ensured that questions were clear and aligned with research objectives, facilitating accurate responses from participants.

Ethical Considerations

Ethical protocols included obtaining an introduction letter from the university and permission from local authorities. Consent was sought from the District Head Officer, Police Division Authorities, and Local Councilors. At meetings with participants, the study's aims were explained in a familiar language, and informed consent was obtained in writing. Confidentiality was strictly maintained, with assurances that participants' names would not be recorded and that data would solely be used for academic purposes. Personal privacy and data confidentiality were prioritized throughout the study.

RESULTS AND DISCUSSION

This study investigates the factors contributing to early weaning among breastfeeding mothers in Kano Municipal Local Government Area (LGA), presenting data through frequency tables, bar graphs, and pie charts. The socio-demographic characteristics of respondents, their knowledge of breastfeeding practices, and socio-economic and psychological factors influencing early weaning are analyzed.

Socio-Demographic Data of Respondents

The findings indicate that 83% of the respondents were female,

with males constituting only 17% (Figure 2A). This significant gender distribution reflects the study's focus on women ($p < 0.05$, $X^2 = 174.256$, $df = 1$, $p = .000$). The majority of respondents were aged between 26 and 35 years (45%), with significant proportions also falling in the 15-25 (30%) and 36-45 (20%) age brackets ($p < 0.05$, $X^2 = 136.583$, $df = 3$, $p = .0002$) (Figure 2B). This trend highlights the importance of targeting mothers in their reproductive prime, as they often face challenges balancing employment and childcare, thus promoting weaning.

Regarding educational status, 40% of the respondents had only completed primary education, while 30% attended secondary school and 20% had no formal education (Figure 2C). The lower educational attainment is significant and may contribute to misconceptions regarding breastfeeding practices, as evidenced by the statistical significance in educational distribution ($p < 0.05$, $X^2 = 195.151$, $df = 4$, $p = 0.00025$). Additionally, marital status revealed that 65% of respondents were married, affirming that the majority were in stable relationships ($p < 0.05$, $X^2 = 36.330$, $df = 1$, $p = .000$) (Figure 2D). Most respondents (90%) were Muslims, reflecting the demographic makeup of the region ($p < 0.05$, $X^2 = 258.881$, $df = 1$, $p = 0.00014$) (Figure 2E). Furthermore, 60% of the mothers were unemployed, suggesting a socio-economic context that can drive early weaning due to food insecurity and inadequate nutritional resources for breastfeeding ($p < 0.05$, $X^2 = 16.280$, $df = 1$, $p = 0.00018$) (Figure 2F).

Knowledge of Breastfeeding Practices

The study also assessed mothers' understanding of breastfeeding techniques. A notable 60% were familiar with natural breastfeeding, yet most working mothers reported only being able to breastfeed for two months, while private sector mothers had an even shorter grace period of two weeks ($p < 0.05$, $X^2 = 16.280$, $df = 1$, $p = 0.00021$). This limited breastfeeding duration is concerning as it contradicts WHO recommendations advocating for exclusive breastfeeding for the first six months [1]. The reliance on artificial feeding methods, with 40% of mothers resorting to bottle feeding (Figure 3A), underscores the pressing need for enhanced education on breastfeeding practices. This aligns with other findings, which indicate that economic constraints lead many mothers to opt for cow milk and porridge as substitutes, jeopardizing infants' nutritional needs.

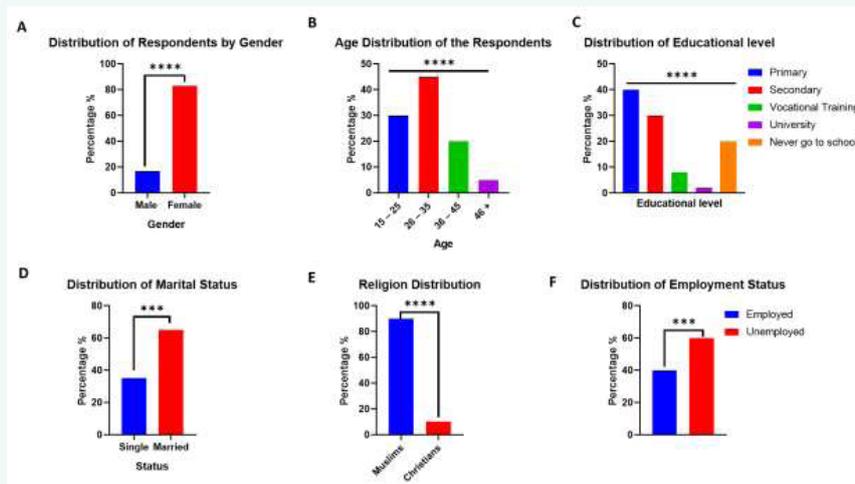


Figure 2: Socio-Demographic Characteristics of Respondents. This figure highlights key demographic factors such as age, gender, education, marital status, and employment among respondents. These variables provide context on the population's characteristics, influencing early weaning practices

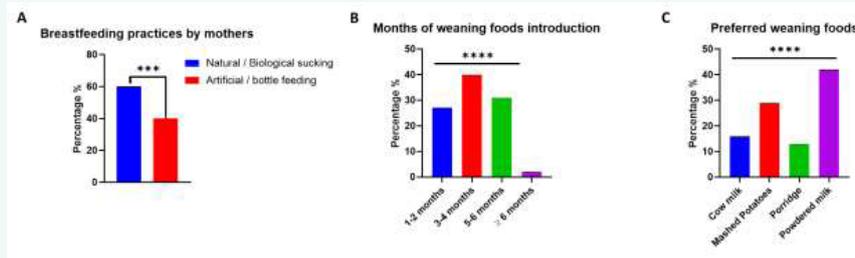


Figure 3: Knowledge and Practices Related to Breastfeeding and Weaning Among Respondents. This figure illustrates respondents' awareness of breastfeeding benefits and recommended practices, as well as the timing of first weaning food introduction. The data show variations in knowledge and practice adherence, highlighting influences on early weaning

Timing of Introducing Weaning Foods

The data reveal that 40% of mothers introduced complementary foods between 3-4 months of age, with significant percentages starting earlier (31% at 5-6 months and 27% at 1-2 months) ($p < 0.05$, $X^2 = 127.928$, $df = 3$, $p = 0.0001$) (Figure 3B). The preferred weaning food was powdered milk (42%), followed by mashed potatoes (29%), cow milk (16%), and porridge (13%) ($p < 0.05$, $X^2 = 85.129$, $df = 3$, $p = 0.00014$) (Figure 3C). These practices highlight the gap in knowledge regarding appropriate weaning ages and food choices, which may adversely impact child health.

Socio-Economic and Psychological Factors Influencing Early Weaning

A principal aim of this research was to explore socio-economic and psychological factors contributing to early weaning. The results indicated that extreme poverty, lack of employment opportunities, and poor living conditions were cited by 30% of respondents as primary reasons for early weaning. Additionally, issues such as teenage motherhood, child health concerns, and inadequate family planning were also significant contributors (18% each) (Figure 4A). The inability to provide sufficient breast milk due to nutritional deficits further compounded these issues, leading mothers to resort to milk substitutes. Furthermore, societal stigmas surrounding HIV/AIDS influenced decisions to wean early, particularly among affected mothers. The statistical significance of these socio-economic factors ($p < 0.05$, $X^2 = 243.280$, $df = 8$, $p = 0.00042$) highlights the interplay between socio-economic status and breastfeeding practices.

Consequences of Early Weaning

The consequences of early weaning were explored, revealing that 20% of respondents noted poor metabolic development in infants, followed by 15% citing excessive diarrhea due to unsafe water, and issues like stunted growth (10%) and increased diabetes risk (5%) (Figure 4B). These findings are alarming and point to the broader implications of early weaning on child health and development. The statistical significance of the reported consequences ($p < 0.05$, $X^2 = 65.546$, $df = 7$, $p = 0.0002$) underscores the urgent need for interventions aimed at promoting breastfeeding and addressing the socio-economic factors influencing early weaning practices.

The study reveals critical insights into the socio-demographic profile of breastfeeding mothers in Kano Municipal LGA and highlights the urgent need for targeted interventions. The implications of early weaning are profound, necessitating an integrated approach to improve breastfeeding practices, enhance maternal education, and address the socio-economic challenges faced by these mothers. Future research should focus on developing comprehensive strategies that empower mothers with knowledge and resources, ensuring adherence to breastfeeding guidelines set forth by health authorities.

DISCUSSION

This study provides valuable insights into the socio-demographic profile of breastfeeding mothers in Kano Municipal Local Government Area (LGA), focusing on the complex factors contributing to early weaning. The findings highlight the multifaceted challenges these mothers face,

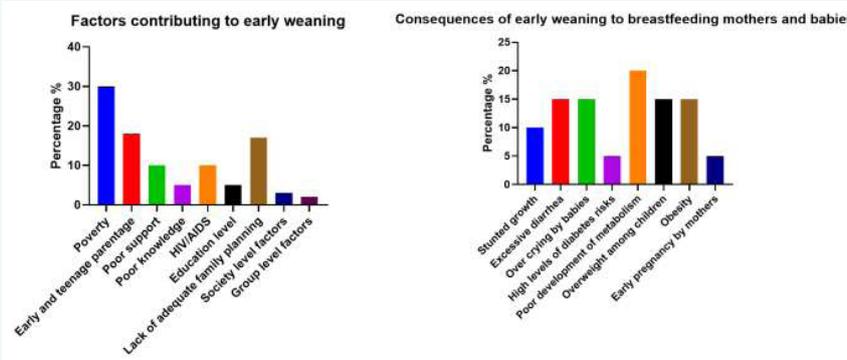


Figure 4: Socio-Economic and Psychological Factors and Health Consequences Associated with Early Weaning. This figure integrates socio-economic constraints, cultural influences, and psychological factors that contribute to early weaning decisions, along with reported health impacts on infants, such as higher infection rates and nutritional deficiencies. The figure underscores the complex interplay of factors affecting early weaning and its outcomes.



driven by individual, societal, and economic dynamics, and emphasize the need for comprehensive interventions.

A significant challenge lies in balancing work and childcare responsibilities, particularly in low-income settings where formal maternity leave policies and workplace accommodations for breastfeeding are lacking. Many women resume work soon after childbirth, limiting their ability to exclusively breastfeed for the recommended six months. This aligns with studies in Ethiopia, which identified workplace constraints such as the absence of breastfeeding breaks or designated areas as significant contributors to early weaning [12]. These findings underscore the importance of advocating for supportive policies, including paid maternity leave and breastfeeding facilities, to create an enabling environment for sustained breastfeeding.

Educational attainment also plays a pivotal role in shaping breastfeeding practices. Mothers with lower levels of education often hold misconceptions, such as believing exclusive breastfeeding is insufficient to meet an infant's nutritional needs. Similar patterns have been observed in Ghana, where maternal education levels strongly influenced adherence to WHO recommendations, with lower education being associated with the premature introduction of complementary foods [13]. Addressing these gaps requires targeted maternal education programs that dispel myths, provide accurate breastfeeding information, and foster adherence to global standards.

The timing and choice of complementary foods further reflect critical knowledge deficits among mothers. A substantial number of women introduced complementary foods before six months, opting for substitutes such as powdered milk and porridge, which are often nutritionally inadequate. These findings mirror trends reported in Ghana, where societal norms and misconceptions about breastfeeding were common drivers of premature weaning [14]. Such practices not only compromise infant health but also highlight systemic issues, including limited healthcare access and a lack of community-driven education initiatives.

Economic hardships, including unemployment and poverty, emerged as significant factors influencing early weaning decisions. Financial constraints often compel mothers to choose cost-effective feeding options over nutritionally appropriate alternatives. Additionally, societal pressures and psychological challenges, such as stigma around breastfeeding in public and concerns over HIV/AIDS transmission, further exacerbate the problem. Similar socio-economic barriers were identified in Uganda [15], emphasizing the need for multi-sectoral interventions that promote economic empowerment, improve access to family planning, and cultivate supportive societal attitudes toward breastfeeding.

The health implications of early weaning are far-reaching and profound. Infants who do not receive exclusive breastfeeding are at heightened risk of stunted growth, poor metabolic development, and increased susceptibility to infectious diseases, including diarrhea. These observations align with research from Dhaka, which demonstrated that exclusive breast feeding significantly reduce the risk of diarrhea death among infants [16]. These findings highlight the urgency of implementing comprehensive public health strategies to improve breastfeeding practices and mitigate health risks for children.

Addressing these challenges requires innovative, context-specific solutions. Community-based support systems, such as breastfeeding support groups and peer counselors, can play a critical role in providing resources and encouragement to mothers. Integrating breastfeeding education into routine antenatal and postnatal care ensures timely and consistent guidance. Previous studies illustrates that embedding lactation consultants within primary healthcare settings significantly improves breastfeeding adherence [17]. Strengthening healthcare infrastructure to

include these resources, alongside workplace and hospital policies that support breastfeeding, will further enhance outcomes.

Future research should focus on evaluating the effectiveness of tailored interventions aimed at reducing early weaning rates. Studies exploring culturally sensitive education campaigns, economic empowerment programs, and policies promoting workplace breastfeeding support are particularly needed. Additionally, longitudinal research examining the health outcomes of infants who are exclusively breastfed compared to those introduced to complementary foods prematurely would provide deeper insights. By addressing the root causes of early weaning, these strategies have the potential to improve breastfeeding outcomes, enhance maternal and child health, and contribute to broader societal well-being.

CONCLUSION

Breastfeeding remains unparalleled as the ideal nutritional start for infants, laying a vital foundation for a healthier life well into adulthood. However, breastfeeding does not come entirely instinctively, and many mothers require informed guidance from healthcare professionals to overcome barriers and ensure breastfeeding success. This study in Kano Municipal LGA sheds light on the socio-economic, cultural, and physiological challenges that drive early weaning, revealing that economic hardship, substandard living conditions, and limited milk supply often lead mothers to substitute breastmilk with alternatives like cow's milk and porridge.

The findings also underscore the implications of inadequate family planning, where closely spaced pregnancies often push mothers to wean their older infants prematurely to meet the demands of a new pregnancy. Such early weaning is associated with stunted growth in children, likely due to lower leptin levels, a hormone linked to satiety and growth, underscoring the physiological impact of early breastfeeding cessation on child development.

These insights call for an urgent, multi-faceted approach to breastfeeding support. Healthcare professionals should be well-equipped with culturally sensitive training to promote and reinforce positive breastfeeding practices, helping mothers navigate both cultural perceptions and socio-economic barriers. Strengthening family planning education, maternal mental health resources, and nutritional guidance can empower mothers to maintain breastfeeding for the recommended duration. By addressing these interconnected factors, public health initiatives can significantly enhance child health outcomes, building a healthier future for communities in low-resource settings.

AUTHOR CONTRIBUTIONS

L.R and N.M.S conceived the idea, L.R wrote the manuscript; M.A.A, M.I.M and M.A.S made critical contribution in data collection, and offer valuable insights and suggestions related to the write up of this article; N.M.S supervised the writing process and revised the final draft.

FUNDING STATEMENT

This work is self-funded by Lawan Rabiun and Nura Muhammad Sani

ACKNOWLEDGMENT

We acknowledge Shamsuddeen Salisu Tashena, Adeleye O. Adeshakin and Lukman O. Afolabi for their valuable encouragement and support towards the completion of this article



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