



UTILIZATION OF ONLINE PREGNANCY INFORMATION AMONG PREGNANT WOMEN ATTENDING MUHAMMADU ABDULLAHI WASE TEACHING HOSPITAL, KANO STATE, NIGERIA

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ABSTRACT

BACKGROUND:

The increasing availability of digital technologies has transformed how pregnant women access health information, particularly in low- and middle-income countries. This study assessed the utilization of online pregnancy health information among pregnant women attending antenatal care at Muhammadu Abdullahi Wase Teaching Hospital, Kano State.

METHODOLOGY:

A cross-sectional study design was employed, involving a quantitative survey of 422 pregnant women. Data were collected using a structured questionnaire. Quantitative data were analyzed using descriptive and inferential statistics using SPSS version 23. Logistic regression was used to identify the predictors at a confidence interval of 95% and p -value < 0.05 was considered significant.

RESULTS:

The study revealed that 60.4% of respondents utilized online pregnancy health information, with more than half engaging frequently on the internet. Age ($p=0.012$), educational level ($p<0.001$), and gestational age ($p=0.001$) were identified as significant predictors of online pregnancy health information utilization.

CONCLUSION:

The study showed that online pregnancy health information is moderately utilized among pregnant women, highlighting the need for healthcare providers to integrate digital health guidance into routine antenatal care.

KEYWORDS:

Online health information, pregnancy, utilization, antenatal care, maternal health.

INTRODUCTION:

Pregnancy is a critical and transformative period in a woman's life that requires access to accurate, timely and comprehensive

health information to support informed decision making and positive maternal and fetal outcomes.^[1] Decisions taken during pregnancy regarding nutrition, lifestyle, antenatal care and management of pregnancy related symptoms have significant implications for maternal and child health.^[1] Consequently, access to appropriate health information remains an important part of safe motherhood and quality antenatal care.

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Traditionally, pregnant women obtained pregnancy related information from healthcare providers, family members, friends, printed materials, and antenatal education sessions.^[2] However, the rapid expansion of internet access and digital technologies has significantly transformed health information seeking behavior globally. The internet has emerged as a readily accessible, low cost, and convenient source of health information, enabling pregnant women to seek answers to pregnancy related concerns at any time. ^[2]

Globally, studies have demonstrated a high level of utilization of online health information among pregnant women. In high income countries, between 70% and 90% of pregnant women reportedly use the internet to search for pregnancy related information.^[3] Commonly sought information includes fetal development, nutrition, pregnancy complications, and preparation for labor and delivery. ^[4] This growing reliance on online sources has been attributed to the convenience, anonymity, and wide range of information available online. ^[4]

In low and middle income countries, including Nigeria, the increasing penetration of smartphones and mobile internet services has similarly influenced the utilization of online health information among pregnant women. ^[5] Studies conducted in different parts of Nigeria have reported that a substantial proportion of pregnant women use online platforms such as search engines, social media, pregnancy applications, and health websites to obtain pregnancy related information. ^[5, 6] Despite this growing trend, disparities in utilization persist due to differences in age, educational level, digital literacy, and access to reliable internet services.

Despite the increasing body of literature on online pregnancy health information utilization, most existing studies have largely focused on describing the level of use; types of information sought and preferred online platforms. Fewer studies have gone beyond descriptive findings to systematically identify the predictors of utilization using inferential statistical methods, particularly in low- and middle-income settings. Moreover, evidence examining the influence of socio-demographic and pregnancy-related factors such as age, educational level and gestational age on online pregnancy health information utilization remains limited, especially in North-Western Nigeria. ^[6]

This lack of context-specific evidence constrains the ability of healthcare providers and policymakers to design targeted digital health interventions for pregnant women.

Although the utilization of online pregnancy health information offers opportunities for improved health knowledge and empowerment, concerns remain regarding misinformation, misinterpretation of medical content, and variable quality of online resources. ^[3] Understanding the extent to which pregnant women utilize online health information is therefore essential for guiding healthcare providers and policymakers in integrating digital health education into routine antenatal care services.

Therefore, this study assessed the utilization of online pregnancy health information among pregnant women attending antenatal care at Muhammadu Abdullahi Wase Teaching Hospital, Kano State, Nigeria with particular emphasis on identifying the predictors influencing its utilization. Findings from this study will provide data to support the development of context-specific strategies aimed at promoting safe, informed, and effective use of online health information during pregnancy.

MATERIALS AND METHODS

Study setting

The study was conducted at the antenatal clinic of Muhammadu Abdullahi Wase Teaching Hospital, a tertiary healthcare facility located in Kano State, Northwestern Nigeria. The hospital is a major public tertiary health institution in the state and serves as a referral centre for secondary and primary healthcare facilities within Kano State and neighbouring states.

Muhammadu Abdullahi Wase Teaching Hospital provides comprehensive maternal and child health services, including routine antenatal care, emergency obstetric care, postnatal services and specialized obstetric services. The antenatal clinic runs scheduled clinic days each week and caters for a large number of pregnant women from urban and peri-urban communities.

Design

A descriptive cross-sectional study design was

used for this study.

Sampling

The sample size of 422 was used for this study using Cochran's formula. Simple random sampling was used to select participants. A sampling frame was created from the antenatal clinic register, with each pregnant woman assigned a unique clinic number upon arrival. For example, if 50 women attended in a day, they were numbered 1 to 50. A random number generator was then used to select participants from this list. Women whose numbers matched the randomly generated numbers were invited to participate. If a selected participant declined, a replacement was chosen using the same random selection method to maintain the required sample size. This approach ensured that every eligible woman had an equal chance of selection, reducing selection bias.

Instrument

Data were collected using a structured, self-administered questionnaire developed from a review of relevant literature. The questionnaire was adapted from previously published studies assessing online health information-seeking behavior among pregnant women and modified to suit the study objectives. [2, 4, 6] The questionnaire captured information on socio-demographic characteristics and utilization of online pregnancy health information.

Validity and Reliability

The validity of the instrument was ensured through content and face validity. The questionnaire was developed based on a review of relevant literature and aligned with the study objectives. It was reviewed by experts in maternal and public health to assess clarity, relevance and adequacy of the items. Their comments and suggestions were incorporated to improve the instrument.

To ensure reliability, the questionnaire was pretested among 42 pregnant women attending antenatal care at a health facility outside the study setting. Data obtained from the pretest were analyzed, and internal consistency of the instrument was assessed using Cronbach's alpha coefficient. A reliability coefficient of 0.78 was obtained, indicating acceptable internal consistency of the questionnaire. Necessary adjustments were made to the instrument based on findings from the pretest before the commencement of the main study.

Data Collection

Data collection was conducted by the researcher with the support of a trained research assistant who is a registered nurse familiar with antenatal clinic procedures. Prior to data collection, the research assistant received brief training on the study objectives, ethical considerations, participant recruitment and administration of the questionnaire to ensure uniformity.

Eligible pregnant women attending antenatal care were approached during clinic days, and the purpose of the study was explained to them. Written informed consent was obtained before participation. The structured questionnaire was self-administered; however, the research assistant assisted participants who had difficulty reading or understanding the questionnaire by translating questions into the local language where necessary. Data collection spanned a period of two months.

Data Analysis

Data obtained were analyzed using Statistical Package for Social Sciences (SPSS) software version 23.0. The results were presented using descriptive statistics such as frequencies and percentages. Inferential statistics utilized logistics regression to identify predictors between utilization and selected socio-demographic variables, with statistical significance set at $p < 0.05$.

Ethical Consideration

Ethical approval for the study was obtained from the National Health Research Ethics Committee (NHREC) of the Kano State Ministry of Health (Reference No: NHREC/17/03/2018). Permission to conduct the study was granted by the management of Muhammadu Abdullahi Wase Teaching Hospital, Kano, Nigeria. Participation was voluntary, and written informed consent was obtained from all participants after explaining the purpose and procedures of the study.

Confidentiality was ensured by restricting access to the collected data to the researcher only and securely storing both hard and electronic copies of the data. Anonymity was maintained by excluding personal identifiers such as names from the data collection instruments and each questionnaire was assigned a unique study code.

Results

Table 1: Socio-Demographic Characteristics of the Participants in Muhammadu Abdullahi Wase Teaching Hospital, Kano, Nigeria in 2025

Variable	Frequency (n= 422)	Percentage (%)
Age (years)		
18-25	110	26.1
26-35	203	48.1
>35	109	25.8
Mean age =30.61 years $\pm$ 3.02		
Educational Level		
Primary	46	10.9
Secondary	194	46.0
Tertiary	182	43.1
Gestational age		
First trimester	129	30.6
Second trimester	141	33.4
Third trimester	152	36.0
Parity		
Primiparous	156	37.0
Multiparous	266	63.0

Table 1 presents the socio-demographic characteristics of the study participants. Nearly half of the respondents (48.1%) were aged 26–35 years, with a mean age of 30.61 years. In terms of educational attainment, most participants had either secondary education (46.0%) or tertiary education (43.1%), while only 10.9% reported primary education as their highest qualification.

Regarding pregnancy profile, 36.0% of the women were in their third trimester, 33.4% in the second trimester, and 30.6% in the first trimester. As for parity, 63.0% were multiparous while 37.0% were primiparous.

Utilization of Online Health Information

Table 2: Level of Utilization of Online Health Information in Muhammadu Abdullahi Wase Teaching Hospital,

Variable	Frequency (n= 422)	Percent age (%)
A. Utilization (n= 422)		
Users	255	60.4
Non-users	167	39.6
B. Level of Utilization (n= 255)		
Low (<1 hour/day)	61	23.9
Moderate (1–3 hours/day)	108	42.4
High (>3 hours/day)	86	33.7

Table 2 presents the level of utilization of online health information among the respondents.

Panel A shows the overall utilization status. Out of 422 participants, majority 255 (60.4%) reported using online sources for pregnancy-related information, while 167 (39.6%) indicated that they do not use online sources. Panel B further demonstrates the level of utilization among the 255 users. Of these, 108 (42.4%) were categorized as moderate utilizers (1–3 hours/day), 86 (33.7%) as high utilizers (>3 hours/day), and 61 (23.9%) as low utilizers (<1 hour/day).

This distribution suggests that most women engaged with online health information at a moderate level, while a considerable proportion reported high utilization. These findings highlight the growing importance of online platforms as daily resources for pregnancy-related knowledge and support.

Table 3: Predictors of Online Health Information Utilization (n = 422)

Variable	Adjusted OR (95% CI)	Percentage (%)
Age (years)		
18-25	2.224 (1.19–4.15)	0.012*
26-35	2.125 (1.24–3.64)	0.006*
>35	1.00	
Mean age = 30.61 years $\pm$ 3.02		
Educational Level		
Primary	1.00	
Secondary	0.496 (0.31–0.77)	0.002*
Tertiary	0.241 (0.12–0.49)	<0.001*
Gestational age		
First trimester	1.033 (0.60–1.75)	0.906
Second trimester	2.307 (1.40–3.78)	0.001*
Third trimester	1.00	
Parity		
Primiparous	1.256 (0.78–2.01)	0.346
Multiparous	1.00	

Note: OR = Odds Ratio; CI = Confidence Interval;
* = $p < 0.05$ considered statistically

Table 3 shows that age, educational level, and pregnancy trimester were significant predictors of online health information utilization. Women aged 18–25 years (AOR = 2.224, $p = 0.012$) and 26–35 years (AOR = 2.125, $p = 0.006$) were about twice as likely to utilize online health information compared to women older than 35 years.

Higher educational levels were associated with reduced odds of online health information utilization, with secondary education (AOR = 0.496, $P = 0.002$) and tertiary education (AOR = 0.241, $p = <0.001$). Women in the second trimester were also about two times more likely to utilize online health

information compared to those in the third trimester (AOR = 2.307, $p = 0.001$). Parity was not statistically significant (AOR = 1.256, $p = 0.346$).

Discussion

The socio-demographic distribution of participants provides essential context for understanding their engagement with online pregnancy information. Almost half of the women were aged 26–35 years, with a mean age of 30.6 years, which represents the peak reproductive age group. This finding is consistent with earlier studies showing that women in this age bracket are more likely to use digital platforms for health information because of greater technological familiarity and active reproductive health needs [4].

The educational level of participants further highlights their capacity to access and interpret online health resources. A large majority had attained secondary or tertiary education with only few reporting primary education as their highest qualification. Previous research has consistently shown that higher educational attainment is positively associated with increased health information-seeking online, as educated women are more likely to have the digital literacy skills required to navigate online sources effectively [4,7].

With respect to gestational age, the sample included women across all trimesters, with a slightly higher proportion in the third trimester. This distribution is relevant, as pregnancy stage often influences the topics of information sought online. Women in early pregnancy may search for information on symptoms and fetal development, while those in later stages are more likely to focus on nutrition, safe exercise, labor, and delivery preparation [8].

Parity also appeared to play a role in shaping engagement with online information. A majority of the women were multiparous, while below half were primiparous.

The findings from this study revealed that more than half of the participants reported using online sources to access pregnancy-related information, while below half did not. Among those who used online sources, the largest proportion was

moderate utilizers, engaging with online health information for one to three hours per day. About one-third reported high utilization, spending more than three hours daily, while few demonstrated low utilization, spending less than one hour per day. This distribution highlights that online platforms are not only widely accessed but also integrated into the daily routines of many pregnant women, with varying levels of intensity.

These findings are consistent with a growing body of literature that underscores the increasing reliance of pregnant women on the internet for health information. For example, a study reported that 92% of Brazilian pregnant women accessed health-related information online [3], 81.1% of women in Qatar utilized online resources during pregnancy [4] while separate studies in Turkey and Spain reported 92.4% and 95% respectively [10, 11]. In Nigeria, about 65% of antenatal women at University College Hospital Ibadan accessed the internet daily for health information [5]. Similarly, a qualitative study conducted among 12 antenatal women at Osun State University Teaching Hospital found that all participants utilized online health information [6]. While the current study's 60.4% utilization rate is slightly lower, it remains consistent with both national and global trends, particularly in low-resource settings.

The extent of utilization in this study, where more than three-quarters of women reported either moderate or high engagement, also aligns with international evidence indicating frequent and intensive use of digital platforms during pregnancy [3, 12]. Furthermore, a separate study reported that pregnant women frequently spent over an hour per day online for pregnancy-related information [10]. Although the current study indicated slightly lower levels of intensity, the pattern reinforces the important role of online platforms as an accessible and trusted source of maternal health information. In addition, the results of the current study revealed that educational level was a statistically significant predictor of online health information use. There was a significant increase in online health information utilization among those with tertiary education as compared to primary education.

Age was also found to be a significant predictor, with younger women more likely to use online pregnancy information than older participants.

The binary logistic regression showed a statistically significant inverse relationship between age and online information use (AOR = 0.704, $p = 0.022$), reinforcing the idea that online engagement tends to be more prevalent among younger women. This was in line with previous studies conducted which reported that younger pregnant women were more inclined to seek digital sources for timely and convenient health information [11, 14].

The level of utilization in this study may be attributed to increasing access to smartphones, mobile internet services and a general shift toward digital solutions in health information-seeking behaviors. Moreover, the preference for online sources may be linked to the flexibility, immediacy and perceived privacy they offer allowing women to search for sensitive or urgent topics without the fear of stigma or judgment.

Limitation of the study

The study was conducted in a single tertiary health institution in Kano State, which may limit the generalizability of the findings to other settings. The use of cross sectional study and questionnaire may not be sufficient to give indebt information and establish causal relationship.

Conclusion and Recommendation

The study concludes a moderate level of utilization of online pregnancy health information among respondents. Utilization was influenced by socio-demographic factors, particularly age and educational level revealed that the higher the education the lower the odds to use online information.

It is therefore recommended that healthcare providers integrate guidance on the appropriate use of online pregnancy health information into routine antenatal care services.

Conflict of Interest

There was no conflict of interest among authors while conducting the study

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