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Knowledge of Gestational Diabetes on Access to Antenatal Services Among Pregnant Women in General Hospitals in Akwa Ibom North West District

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Abstract

This study investigated how knowledge of gestational diabetes mellitus (GDM) affects pregnant women's access to antenatal care services in general hospitals in Akwa Ibom North-West District, Nigeria. Using an ex-post facto survey design, 340 respondents were selected from a population of 2,265 pregnant women via proportionate random sampling. Data were collected through a structured, validated questionnaire titled Knowledge of Gestational Diabetes and Pregnant Women Access to Antenatal Services Questionnaire (KGDPWAASQ), which demonstrated Cronbach alpha reliability coefficients of 0.77 and 0.86. Data were analyzed using mean, standard deviation, and independent t-test at a 0.05 level of significance. Findings revealed significant differences in antenatal service utilization based on women's knowledge of GDM risk factors and symptoms, including family history, high blood pressure, feeding patterns, yeast infection, and excessive fatigue. The study concludes that GDM knowledge significantly influences antenatal care utilization and recommends that targeted health education interventions be strengthened to improve awareness and service uptake among pregnant women in the region.

1. Introduction

Gestational diabetes mellitus (GDM) is a condition in which blood sugar levels become elevated for the first time during pregnancy. It can occur at any stage of pregnancy and is defined as any degree of glucose intolerance that develops or is first recognized during gestation. Globally, GDM affects an estimated 15% of pregnant women, with 87.6% of cases occurring in low- and middle-income countries, making it one of the most challenging health problems in sub-Saharan Africa (Ogurtsova et al., 2017). Despite its rising prevalence in Nigeria, information and awareness remain scarce, particularly in rural and semi-urban districts (Yahaya, 2017).

Complications associated with GDM include pre-eclampsia, caesarean delivery, neonatal macrosomia, and increased long-term risk of type 2 diabetes in both mother and child (Lindsay, 2019; Niyibizi et al., 2016). Despite these risks, many pregnant women lack adequate knowledge of GDM risk factors, signs, symptoms, and preventive measures, which reduces their motivation to utilize antenatal care (ANC) services. Adequate knowledge of GDM causes, symptoms, and prevention has been shown to promote health-seeking behavior and increase ANC utilization (Sisodiya & Prakash, 2021).

Antenatal care provides an essential platform for early screening, diagnosis, and management of GDM. Yet utilization of ANC services in Akwa Ibom North-West Senatorial District remains suboptimal. This study therefore examined the relationship between GDM knowledge and ANC access among pregnant women in general hospitals in this district, focusing on five specific knowledge domains: family history of GDM, high blood pressure as a complication, feeding patterns as prevention, yeast infection as a causative factor, and excessive fatigue as a symptom.

2. Materials and Methods

2.1 Study Design

An ex-post facto survey design was adopted because the independent variables (knowledge levels) already existed and could not be manipulated. This design allowed comparison of pre-existing groups on a dependent variable (ANC access).

2.2 Study Area and Population

The study was conducted in Akwa Ibom North-West Senatorial District, Nigeria, which comprises 10 Local Government Areas. The study population consisted of 2,265 pregnant women admitted across the six general hospitals in the district (Akwa Ibom State Hospital Management Board, 2021–2022).

2.3 Sample and Sampling Technique

A sample size of 340 pregnant women was determined using the Taro Yamane formula. Four hospitals were selected from the six using balloting (random sampling). Respondents were then drawn from each sampled hospital using proportionate random sampling (96, 93, 83, and 68 participants respectively).

2.4 Instrumentation

Data were collected using the researcher-developed Knowledge of Gestational Diabetes and Pregnant Women Access to Antenatal Services Questionnaire (KGDPWAASQ). The instrument comprised 40 items rated on a 4-point Likert scale (Strongly Agree to Strongly Disagree) across two sections: Section A measured knowledge of GDM; Section B measured ANC access.

Content validity was established by three expert reviewers from the University of Uyo (two from the Measurement and Evaluation Unit and one from Physical and Health Education). Reliability was established using the split-half method with Cronbach alpha, yielding coefficients of 0.77 for the knowledge subscale and 0.86 for the ANC access subscale, both exceeding the acceptable threshold of 0.50.

2.5 Data Analysis

Research questions were answered using mean and standard deviation. Five null hypotheses were tested using independent t-test at a 0.05 level of significance. The null hypothesis was rejected when the t-calculated value exceeded the t-critical value of 1.960.

2.6 Ethical Considerations

Informed consent

was obtained from all participants. Hospitals were notified in advance, and respondents were assured of confidentiality. Participation was voluntary, and no personal data were disclosed to third parties. The study was conducted in accordance with the Declaration of Helsinki.

3. Results

3.1 Knowledge of Family History of GDM and ANC Access

Table 1 presents the mean and standard deviation for ANC access based on knowledge of family history of GDM.

Table 1
Mean and SD on ANC access based on knowledge of family history of GDM.

Group	n	Mean	SD	Mean Difference
Adequate knowledge	159	31.98	5.10	8.30
Inadequate knowledge	181	40.28	3.64	

Women with inadequate knowledge of family history of GDM had a higher mean ANC access score (40.28) than those with adequate knowledge (31.98), yielding a mean difference of 8.30. This indicates that inadequate knowledge is associated with lower ANC engagement.

3.2 Knowledge of High Blood Pressure as a Complication of GDM and ANC Access

Table 2
Mean and SD on ANC access based on knowledge of high blood pressure as a complication of GDM.

Group	n	Mean	SD	Mean Difference
Adequate knowledge	155	28.39	5.10	8.84
Inadequate knowledge	185	37.23	4.17	

The mean difference of 8.84 indicates that pregnant women with inadequate knowledge of high blood pressure as a complication of GDM are less likely to access ANC services.

3.3 Knowledge of Feeding Pattern as Prevention and ANC Access

Table 3
Mean and SD on ANC access based on knowledge of feeding pattern as prevention of GDM.

Group	n	Mean	SD	Mean Difference
Adequate knowledge	168	38.83	4.91	4.89
Inadequate knowledge	172	43.72	4.88	

The mean difference of 4.89 indicates that women with inadequate knowledge of feeding pattern as prevention are less likely to access ANC services.

3.4 Knowledge of Yeast Infection as a Causative Factor and ANC Access

Table 4
Mean and SD on ANC access based on knowledge of yeast infection as a causative factor of GDM.

Group	n	Mean	SD	Mean Difference
Adequate knowledge	163	25.97	4.68	3.75
Inadequate knowledge	177	29.72	3.02	

The mean difference of 3.75 shows that women with inadequate knowledge of yeast infection as a causative factor of GDM are less prone to access ANC services.

3.5 Knowledge of Excessive Fatigue as a Symptom and ANC Access

Table 5
Mean and SD on ANC access based on knowledge of excessive fatigue as a symptom of GDM.

Group	n	Mean	SD	Mean Difference
Adequate knowledge	158	29.04	4.29	5.29
Inadequate knowledge	182	34.33	2.23	

The mean difference of 5.29 indicates that women with inadequate knowledge of excessive fatigue as a GDM symptom are less prone to access ANC services.

3.6 Hypotheses Testing

Table 6
Independent t-test results for all five hypotheses.

Knowledge Variable	df	t-cal	t-crit	p-level	Sig.	Decision
Family history of GDM	338	11.69	1.960	0.05	Sig.	Reject H_0
High blood pressure as complication	338	9.11	1.960	0.05	Sig.	Reject H_0
Feeding pattern as prevention	338	8.85	1.960	0.05	Sig.	Reject H_0
Yeast infection as causative factor	338	8.71	1.960	0.05	Sig.	Reject H_0
Excessive fatigue as symptom	338	10.22	1.960	0.05	Sig.	Reject H_0

All five null hypotheses were rejected. In each case, the t-calculated value exceeded the t-critical value of 1.960 at df = 338 and p = 0.05, confirming significant differences in ANC access based on each GDM

knowledge domain.

4. Discussion

Findings indicate that knowledge of family history of GDM significantly influences ANC access, consistent with Jibril (2017) and Onasoga et al. (2018), who found that low awareness of GDM family history negatively affects ANC utilization. Women aware of a family history of GDM are more likely to seek early screening and preventive care.

Knowledge of high blood pressure as a GDM complication was also significantly associated with ANC utilization. This aligns with Ogu et al. (2019) and Byakwaga et al. (2021), who reported that poor awareness of hypertensive complications deters health-seeking behavior. Gestational hypertension and pre-eclampsia represent serious threats to maternal and fetal survival that ANC visits can help detect and manage.

The significant finding on feeding pattern knowledge supports Muche et al. (2019) and Lakshmi et al. (2018), both of whom found that nutritional knowledge motivates ANC attendance. Dietary education during ANC visits remains a key prevention strategy for GDM.

Knowledge of yeast infection as a GDM causative factor significantly differentiated ANC access groups, consistent with Sopian et al. (2015) and Sisodiya and Prakash (2021). Elevated blood glucose promotes candida overgrowth, and pregnant women who understand this link are more motivated to seek timely medical care.

Finally, knowledge of excessive fatigue as a GDM symptom significantly influenced ANC access. This mirrors findings of Kaur et al. (2019) and Ugege et al. (2019), who found that fatigue is both a strong GDM predictor and a barrier to ANC when its significance is not understood. Targeted education on symptom recognition can improve early care-seeking.

5. Conclusions

This study demonstrates that knowledge of GDM — across all five domains examined — significantly influences pregnant women's access to antenatal care services in Akwa Ibom North-West District, Nigeria. Women with inadequate GDM knowledge consistently showed lower ANC utilization. Health education interventions targeting GDM awareness must be strengthened in this region, with specific emphasis on family history risk, hypertensive complications, dietary patterns, yeast infection linkages, and symptom recognition, to promote timely and regular use of antenatal services.

Abbreviations

The following abbreviations are used in this manuscript:

GDM	Gestational Diabetes Mellitus
ANC	Antenatal Care
KGDPWAASQ	Knowledge of Gestational Diabetes and Pregnant Women Access to Antenatal Services Questionnaire
SD	Standard Deviation
t-cal	t-calculated value
t-crit	t-critical value
HBM	Health Belief Model
TRA	Theory of Reasoned Action

Declarations

Supplementary Materials

Not applicable.

Institutional Review Board Statement

The study was conducted in accordance with the Declaration of Helsinki. Ethical clearance was obtained from the management of the general hospitals in Akwa Ibom North-West Senatorial District and consent was obtained from all participants.

Informed Consent

Statement: Informed consent was obtained from all subjects involved in the study.

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The author declares no conflict of interest.

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Data Availability Statement:

Data supporting reported results are available from the corresponding author upon reasonable request.

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