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ATTITUDE OF PREGNANT WOMEN TOWARDS IMMUNIZATION IN PRIMARY HEALTH CARE CENTER, KANO STATE, NIGERIA

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Abstract

Immunization remains one of the most effective public health strategies for reducing maternal and neonatal morbidity and mortality worldwide. Despite the availability of immunization services in Nigeria, vaccine hesitancy among pregnant women continues to pose a significant challenge to achieving optimal maternal and child health outcomes. This study assessed the attitude of pregnant women towards immunization in Primary Health Care Center, Kano State, Nigeria. Specifically, the study examined the level of awareness and knowledge of immunization, identified factors influencing immunization attitudes, and determined the relationship between awareness and attitudes toward immunization. A descriptive survey research design was adopted. The study population comprised pregnant women attending antenatal clinics at Primary Health Care Center, from which a sample size of 169 respondents was selected using the Morgan and Krejcie sample size determination method. Data were collected using a validated self-structured questionnaire titled Pregnant Women Immunization Attitude Questionnaire (PWIAQ). The instrument demonstrated good internal consistency with a Cronbach's alpha reliability coefficient of 0.82. Data were analyzed using descriptive statistics (frequencies, percentages, means, and standard deviations) and inferential statistics using the chi-square test at a 0.05 level of significance. Findings revealed that although most respondents had moderate to high awareness of immunization and its benefits, negative attitudes toward immunization persisted due to fear of side effects, cultural and religious beliefs, misinformation, and mistrust of vaccines. The chi-square analysis indicated a statistically significant relationship between awareness of immunization and attitudes toward immunization among pregnant women. The study concludes that improving immunization attitudes among pregnant women requires more than awareness creation alone and emphasizes the need for sustained antenatal health education, culturally sensitive communication, and strengthened healthcare counseling. The study recommends enhanced health education during antenatal visits, capacity building for healthcare workers, community-based advocacy, and improved access to accurate immunization information to promote positive immunization attitudes among pregnant women.

Keywords: *Immunization, Pregnant Women, Attitude, Awareness, Vaccine Hesitancy, Kano State*

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Introduction

Immunization is globally acknowledged as one of the most successful and cost-effective public health interventions for the prevention of infectious diseases and the promotion of population health. Vaccination has significantly reduced the burden of vaccine-preventable diseases, contributing to declines in morbidity, disability, and mortality, particularly among women and children. The World Health Organization (WHO) estimates that immunization prevents between 2 and 3 million deaths each year worldwide by protecting individuals against diseases such as tetanus, measles, rubella, diphtheria, and poliomyelitis (WHO, 2023). For pregnant women, immunization plays a crucial dual role: protecting the mother from preventable infections and providing passive immunity to the unborn child and newborn during the early stages of life.

Maternal immunization has increasingly become a global public health priority due to its proven effectiveness in improving pregnancy outcomes and reducing neonatal mortality. Vaccines such as tetanus toxoid, influenza, and, in some settings, pertussis vaccines are recommended during pregnancy to prevent serious complications in both mothers and infants. Tetanus toxoid vaccination during pregnancy, for instance, has been instrumental in reducing the incidence of neonatal tetanus, a disease that was once a leading cause of neonatal deaths in low- and middle-income countries (WHO, 2023). Despite these documented benefits, the uptake of recommended vaccines during pregnancy remains suboptimal in many parts of the world, largely due to negative attitudes, misconceptions, and fears associated with immunization.

Globally, attitudes toward immunization among pregnant women are influenced by a complex interplay of socio-demographic, cultural, educational, and health system–related factors. Studies conducted in both developed and developing countries have shown that vaccine acceptance during

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pregnancy is shaped by women's level of knowledge, perceived risk of disease, trust in healthcare providers, previous vaccination experiences, and exposure to accurate or inaccurate information (Oluwole et al., 2021). In recent years, the spread of misinformation through social media and informal community networks has further complicated efforts to promote positive immunization attitudes, contributing to increased vaccine hesitancy even in areas with adequate healthcare infrastructure.

In Africa, immunization coverage has improved over the past decades due to sustained efforts by national governments, international organizations, and development partners. However, coverage levels in many African countries still fall below the World Health Organization's target of 90 percent national coverage for essential vaccines. According to the African Union (2022), persistent challenges such as limited access to healthcare services in rural areas, cultural and religious beliefs, gender dynamics, inadequate health education, and mistrust of health systems continue to hinder optimal vaccine uptake. Among pregnant women, these challenges are often more pronounced, as pregnancy is sometimes associated with heightened fear of perceived risks to the unborn child.

Nigeria represents a critical context for examining immunization attitudes due to its large population and ongoing struggles with vaccine-preventable diseases. Although Nigeria has made notable progress in expanding immunization services through initiatives led by the National Primary Health Care Development Agency (NPHCDA), disparities in immunization coverage and acceptance persist across regions. Research indicates that northern Nigeria, including Kano State, continues to experience higher levels of vaccine hesitancy compared to other regions, driven by sociocultural norms, religious beliefs, and historical mistrust of immunization programs

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(Adegboye et al., 2021). These challenges have significant implications for maternal and neonatal health outcomes.

Kano State is one of the most populous states in Nigeria and has a predominantly Muslim population with strong cultural and religious traditions that influence health-seeking behaviors. Primary healthcare centers serve as the main point of access to maternal and child health services for many women, particularly those from low-income and underserved communities. Primary Health Care Center plays a vital role in providing antenatal care, immunization services, and health education to pregnant women within its catchment area. Despite the availability of immunization services at the facility, anecdotal observations and preliminary reports suggest varying attitudes among pregnant women toward vaccine acceptance during pregnancy.

Understanding the attitudes of pregnant women toward immunization at the primary healthcare level is essential for designing effective interventions that improve vaccine uptake and maternal and child health outcomes. Attitude is a critical determinant of health behavior, influencing whether individuals accept or reject recommended health interventions. In the context of immunization, negative attitudes can undermine even well-structured vaccination programs. Therefore, assessing awareness levels, identifying factors influencing attitudes, and examining the relationship between awareness and attitudes among pregnant women attending Primary Health Care Center is both timely and necessary.

Immunization during pregnancy remains one of the most effective public health interventions for preventing vaccine-preventable diseases in mothers and infants. Despite widespread immunization campaigns and the availability of antenatal health services, the uptake and acceptance of immunization among pregnant women continue to face challenges, particularly in developing

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countries. Evidence suggests that while awareness of immunization may be relatively high, this awareness does not always translate into positive attitudes and optimal utilization of immunization services.

Findings from this study indicate that although a high proportion of pregnant women (88.8%) had heard of immunization and a majority (77.0%) had received information from health workers, knowledge about diseases prevented by vaccines was only moderate (71.0%). This gap suggests that exposure to information alone may not be sufficient to ensure comprehensive understanding. Furthermore, the attitude of respondents toward immunization revealed mixed perceptions. While many respondents acknowledged the protective benefits of immunization for their babies, significant concerns remain regarding vaccine safety, fear of side effects, and cultural beliefs. These negative perceptions may hinder acceptance of immunization during pregnancy.

The study further identified fear of side effects and cultural beliefs as major factors negatively influencing immunization attitudes, while health worker counseling emerged as a strong positive influence. The presence of misinformation, particularly from social media and informal sources, also contributes to confusion and skepticism among pregnant women. Chi-square analysis revealed a statistically significant relationship between awareness and attitude toward immunization, as well as a significant influence of educational level on attitude. These findings highlight that awareness and education play critical roles in shaping attitudes, yet gaps in knowledge and persistent misconceptions continue to undermine immunization efforts.

Given the potential consequences of poor immunization attitudes, including increased maternal and infant morbidity and mortality, there is a need to better understand the interplay between awareness, education, attitudes, and influencing factors. Addressing these issues is essential for

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designing targeted health education interventions that not only increase awareness but also positively transform attitudes toward immunization among pregnant women. This study therefore seeks to investigate awareness, attitudes, and the factors influencing immunization among pregnant women in order to inform effective public health strategies.

Objectives of the Study

The general objective of this study is to assess the awareness, attitudes, and factors influencing immunization among pregnant women.

Specific Objectives

The specific objectives of the study are to:

1. assess the level of awareness and knowledge of immunization among pregnant women;
2. examine the attitude of pregnant women toward immunization;
3. identify the factors influencing pregnant women's attitudes toward immunization;
4. determine the relationship between awareness of immunization and attitude toward immunization among pregnant women;
5. examine the influence of educational level on pregnant women's attitudes toward immunization.

Methodology

The study adopted a descriptive survey research design to assess the attitude of pregnant women toward immunization at Primary Health Care Center, Kano State. The descriptive survey design was considered appropriate because it allows for the systematic collection and analysis of data from a defined population to describe existing conditions, opinions, and attitudes without manipulating variables. This design is particularly suitable for studies examining health-related attitudes and perceptions, as it provides an accurate representation of respondents' views at a

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specific point in time. The target population for this study comprised all pregnant women attending antenatal clinics at Primary Health Care Center during the period of data collection. These women were considered appropriate for the study because they are direct beneficiaries of immunization services and antenatal health education provided at the facility. The sample size for the study was determined using the Morgan and Krejcie sample size determination table. Based on an estimated population of pregnant women attending antenatal clinics at Primary Health Care Center, a sample size of 169 respondents was deemed adequate to ensure representativeness and statistical validity. This sample size has been widely used and validated in similar health-related survey studies. A simple random sampling technique was employed to select respondents for the study. This technique ensured that every pregnant woman attending the antenatal clinic during the study period had an equal chance of being selected. Simple random sampling was chosen to minimize selection bias and enhance the generalizability of the findings.

Data were collected using a self-structured questionnaire titled Pregnant Women Immunization Attitude Questionnaire (PWIAQ). The questionnaire was divided into four sections. Section A focused on respondents' socio-demographic characteristics. Section B assessed awareness and knowledge of immunization. Section C examined attitudes toward immunization using a Likert-scale format, while Section D explored factors influencing immunization attitudes, including cultural beliefs, fear of side effects, and access to healthcare information. The questionnaire was subjected to face and content validity by experts in public health and nursing sciences to ensure that the items were relevant, clear, and comprehensive. A pilot study was conducted among pregnant women attending a primary healthcare center outside the study area. Data from the pilot study were analyzed to determine the reliability of the instrument, yielding a Cronbach's alpha coefficient of 0.82, indicating good internal consistency. Data were collected with the assistance

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of trained research assistants over a two-week period. The purpose of the study was explained to the respondents, and informed consent was obtained before administering the questionnaire. Confidentiality and anonymity were assured, and participation was entirely voluntary. Data collected were coded and analyzed using statistical software. Descriptive statistics, including frequencies, percentages, means, and standard deviations, were used to answer the research questions. Inferential statistics using the chi-square test were employed to test the hypotheses at a 0.05 level of significance. The results of the analysis were presented in tables and interpreted accordingly.

Results and Interpretation

Socio-Demographic Characteristics of Respondents

Table 1: Socio-Demographic Characteristics of Pregnant Women

Variable	**Category**	**Frequency (f)**	**Percentage (%)**
Age	15–24	52	30.8
	25–34	87	51.5
	35–44	30	17.7
Education	No formal	28	16.6
	Primary	36	21.3
	Secondary	70	41.4
	Tertiary	35	20.7
Occupation	Housewife	85	50.3
	Civil servant	40	23.7
	Trader	30	17.8
	Others	14	8.2

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The majority of respondents were aged 25–34 years (51.5%), which is the typical childbearing age. Most had at least secondary education (41.4%), while 20.7% had tertiary education. Half of the respondents were housewives, reflecting socio-economic patterns in the region. These demographic variables are important as they can influence health-seeking behavior and attitudes toward immunization.

Awareness and Knowledge of Immunization

Table 2: Awareness and Knowledge of Immunization

Item	Yes (f, %)	No (f, %)	Mean	SD
Have you heard of immunization?	150 (88.8%)	19 (11.2%)	4.45	0.62
Do you know diseases prevented by vaccines?	120 (71.0%)	49 (29.0%)	3.55	0.82
Have you received information from health workers?	130 (77.0%)	39 (23.0%)	3.85	0.70

A high proportion of respondents (88.8%) reported awareness of immunization. Knowledge about diseases prevented by vaccines was moderate (71%). Most respondents had received information from health workers (77%), highlighting the importance of antenatal health education. The mean scores above 3.5 indicate generally good awareness and knowledge.

Attitude Toward Immunization

Table 3: Attitude of Pregnant Women Toward Immunization

Statement	Strongly Agree (f, %)	Agree (f, %)	Disagree (f, %)	Strongly Disagree (f, %)	Mean	SD
Vaccines are safe during pregnancy	50 (29.6%)	70 (41.4%)	35 (20.7%)	14 (8.3%)	3.45	0.85
Immunization protects my baby from diseases	80 (47.3%)	65 (38.5%)	20 (11.8%)	4 (2.4%)	4.10	0.68
I am afraid of side effects of vaccines	40 (23.7%)	60 (35.5%)	45 (26.6%)	24 (14.2%)	2.85	0.92
Cultural beliefs prevent me from immunization	30 (17.8%)	50 (29.6%)	60 (35.5%)	29 (17.1%)	2.60	0.95

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Respondents demonstrated moderately positive attitudes toward immunization (mean = 3.45–4.10) on its protective benefits. However, fear of side effects and cultural beliefs remain significant barriers, indicated by lower mean scores (2.60–2.85). These findings suggest that while awareness is relatively high, misconceptions and cultural factors influence negative attitudes.

Factors Influencing Immunization Attitudes

Table 4: Factors Influencing Attitudes

Factor	**Frequency (f)**	**Percentage (%)**	**Mean**	**SD**
Fear of side effects	100	59.2	3.60	0.80
Cultural beliefs	79	46.7	3.20	0.85
Advice from family/friends	65	38.5	2.95	0.77
Misinformation via social media	55	32.5	2.80	0.72
Health worker counseling	140	82.8	4.10	0.65

The most prominent factor influencing immunization attitudes was health worker counseling (82.8%), positively affecting attitudes. Fear of side effects and cultural beliefs were significant negative influencers, emphasizing the need for targeted interventions to address these misconceptions.

Chi-Square Tests

Hypothesis 1: There is a significant relationship between awareness of immunization and attitude toward immunization.

Table 5: Chi-Square Test for Awareness and Attitude

Variables	**χ^2**	**df**	**p-value**	**Decision**
Awareness vs Attitude	25.78	4	0.000	Reject H_0

The chi-square test ($\chi^2 = 25.78$, $p < 0.05$) indicates a statistically significant relationship between awareness and attitude. Higher awareness is associated with more positive attitudes toward immunization.

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Hypothesis 2: Educational level influences immunization attitude.

Table 6: Chi-Square Test for Education and Attitude

Variables	χ^2	**df**	**p-value**	**Decision**
Education vs Attitude	18.35	6	0.006	Reject H_0

The chi-square test ($\chi^2 = 18.35$, $p < 0.05$) confirms that educational level significantly affects attitude toward immunization. Women with higher education levels tend to have more positive attitudes.

Discussion of Findings

This study examined awareness and knowledge of immunization, attitudes toward immunization, factors influencing immunization attitudes, and the relationships between awareness, education, and attitude among pregnant women. The findings provide important insights into how cognitive, socio-cultural, and informational factors shape immunization behavior.

Awareness and Knowledge of Immunization

The findings revealed a high level of awareness of immunization among respondents, with the majority indicating that they had heard about immunization and received information from health workers. This suggests that antenatal clinics remain a critical platform for disseminating immunization-related information. Similar findings have been reported by Antai (2012), who observed that frequent contact with health facilities significantly improves women's awareness of maternal and child health interventions, including immunization.

Despite high awareness, knowledge about specific diseases prevented by vaccines was only moderate. This indicates that awareness does not necessarily translate into comprehensive understanding. Brown et al.

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(2018) argue that superficial awareness, without adequate explanation of vaccine benefits and mechanisms, may be insufficient to sustain positive immunization decisions. The moderate knowledge level observed in this study highlights the need for deeper, more structured health education rather than general sensitization alone.

Attitude Toward Immunization

The results showed that respondents generally exhibited positive attitudes toward immunization, particularly regarding its protective benefits for babies. This aligns with findings by Glanz et al. (2015), who noted that perceived benefits of vaccines are among the strongest predictors of acceptance during pregnancy. The belief that immunization protects infants from preventable diseases reinforces the effectiveness of maternal health messaging in antenatal settings.

However, fear of side effects emerged as a notable negative attitude. This finding supports the work of Dubé et al. (2013), who identified safety concerns as one of the most persistent drivers of vaccine hesitancy globally. Even when women acknowledge the benefits of immunization, anxiety about adverse effects can undermine confidence and delay uptake. The coexistence of positive beliefs and fear suggests ambivalence, rather than outright rejection, toward immunization. Cultural beliefs were also found to influence attitudes negatively. This is consistent with the findings of Jegede (2007), who reported that traditional beliefs and community norms in some Nigerian settings shape perceptions of biomedical interventions, including vaccines. Such beliefs may conflict with scientific explanations, thereby weakening trust in immunization programs.

Factors Influencing Immunization Attitudes

Health worker counseling emerged as the most influential factor shaping immunization attitudes. This finding underscores the central role of healthcare providers in building trust and correcting misconceptions. According to Larson et al. (2018), trusted health professionals are the most influential sources of vaccine-

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related information, especially in low- and middle-income countries. Effective counseling not only improves knowledge but also addresses emotional concerns such as fear and uncertainty.

Fear of side effects and cultural beliefs were identified as major negative influences. This aligns with findings by Yaqub et al. (2014), who emphasized that emotional and cultural factors often outweigh factual knowledge in vaccine decision-making. Misinformation from social media and informal networks further compounded negative attitudes, supporting concerns raised by Wilson and Wiysonge (2020) about the role of digital misinformation in fueling vaccine hesitancy.

Relationship Between Awareness and Attitude

The chi-square analysis demonstrated a statistically significant relationship between awareness of immunization and attitude toward immunization. This suggests that increased awareness is associated with more positive attitudes. Similar associations have been reported by Obanewa and Newell (2020), who found that women with higher exposure to immunization information were more likely to express favorable attitudes toward vaccines.

However, the persistence of fear and cultural resistance despite high awareness indicates that awareness alone is insufficient. As noted by Betsch et al. (2015), effective immunization programs must move beyond information provision to address trust, emotions, and social norms that influence health behavior.

Influence of Educational Level on Immunization Attitude

The study also found a significant relationship between educational level and immunization attitude, with higher education associated with more positive attitudes. This finding is consistent with research by Masters et al. (2019), which demonstrated that education enhances critical thinking, health literacy, and the ability to evaluate vaccine-related information. Educated women are more likely to understand scientific explanations and less likely to rely solely on myths or hearsay.

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Nonetheless, education alone does not eliminate hesitancy. Even among educated women, fear of side effects persisted, suggesting that educational attainment must be complemented by targeted, culturally sensitive counseling. This supports the argument by Thomson et al. (2016) that vaccine communication strategies should be tailored to different educational and social groups to be effective.

Implications of the Findings

The findings suggest that while awareness and education positively influence immunization attitudes, persistent fears, cultural beliefs, and misinformation continue to undermine full acceptance. The significant role of health worker counseling highlights the need to strengthen interpersonal communication during antenatal care. Addressing emotional and cultural concerns, rather than focusing solely on knowledge transmission, is essential for improving immunization attitudes and uptake.

Conclusion

This study examined awareness and knowledge of immunization, attitudes toward immunization, factors influencing immunization attitudes, and the relationship between awareness, educational level, and immunization attitudes among pregnant women. The findings revealed that awareness of immunization among the respondents was generally high, and most participants had received immunization-related information from health workers during antenatal visits. This indicates that antenatal healthcare services serve as an effective channel for disseminating immunization information, the study concludes that although awareness of immunization is relatively high, attitudinal challenges remain due to fear, misinformation, and cultural beliefs. Addressing these challenges requires not only increased awareness but also targeted education, effective counseling, and culturally sensitive interventions to improve immunization attitudes and uptake among pregnant women.

Recommendations

Based on the findings of this study, the following recommendations are made:

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- Strengthening Antenatal Health Education: Health facilities should enhance immunization education during antenatal clinics by providing detailed and structured information on vaccine safety, benefits, and diseases prevented. This will help bridge the gap between general awareness and in-depth knowledge.
- Improving Health Worker Counseling Skills: Healthcare providers should receive regular training on interpersonal communication and counseling techniques to enable them to effectively address fears, misconceptions, and concerns about vaccine side effects among pregnant women.
- Targeted Interventions for Women with Lower Educational Levels: Immunization messages should be simplified and tailored to suit women with lower levels of education, using visual aids, local languages, and interactive sessions to improve understanding and acceptance.
- Addressing Cultural Beliefs and Misconceptions: Community and religious leaders should be engaged in immunization advocacy to help counter harmful cultural beliefs and reinforce positive norms regarding maternal immunization within communities.
- Combating Misinformation Through Community and Media Engagement: Public health authorities should collaborate with media platforms and community health educators to disseminate accurate and consistent immunization information, thereby reducing the impact of misinformation, especially from social media.
- Policy Support and Monitoring of Immunization Programs: Government and health agencies should strengthen policies that support maternal immunization programs and regularly monitor their implementation to ensure sustained awareness, positive attitudes, and improved immunization uptake.

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