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Prevalence and determinant of Td uptake among pregnant women attending Antenatal Clinic in Gwaram Lga Jigawa state, Nigeria

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Abstract
Background: Tetanus remains a significant cause of maternal and neonatal mortality in Nigeria, particularly in underserved areas. The Tetanus-diphteria (Td) vaccine is a key preventive intervention and recommended during pregnancy to protect both mother and newborns. Despite its proven benefit, the uptake of Td vaccine remains suboptimal in many rural communities. This study aimed to assess the prevalence and identify determinants of Td vaccine uptake among pregnant women attending antenatal care at primary health care centers in Kondiko town, Gwaram Local Government Area, Jigawa State.
Methods: A descriptive cross-sectional study was carried out among 206 respondents that were recruited from the clinic and data were collected using semi-structured interviewer administered questionnaire. Data was analyzed using SPSS Version 21.0, α level of significance was set at 5%.
Results: The age of the respondents ranges from 14 to 49 years and the prevalence of Td vaccine uptake among the respondents was 65% but 48.5%, 89.3% had good knowledge, attitude respectively and 87.9% had poor perception of Td vaccine uptake while educational level, number of antenatal visits and cultural factors are the determinants.
Conclusion: This study found low level of knowledge and perception with positive attitude toward the vaccine. Educational level, number of antenatal visits and cultural factors are the determinants. Strengthening health education and engaging community leaders are essential strategies to promote Td uptake.

Keywords: Prevalence, Td vaccine uptake, pregnant women, antenatal clinic, jigawa

Introduction

Tetanus also Known as lock jaw, is an infection characterized by muscle spasm in the most common type, the spasm begins in the jaw and then progress to the rest of the body, these spasms Usually last a few minutes each time and occur frequently three to four weeks.[1] Spasm may include fever, sweating, headache, trouble swallowing, high blood pressure and Dizziness. Onset of symptoms is typically three to twenty-one days following infection it may take month to cover about 10% of those infected die.[2] Tetanus is a serious but preventable disease caused by the bacterium Clostridium tetani. Despite global vaccination efforts, tetanus remains a public health concern, particularly in low-resource setting but the Incidence; In 2019, there were approximately 73,000 cases of tetanus worldwide, with 27,000 occurring in newborns.[3] Mortality; The same year, tetanus resulted in about 25,000 neonatal deaths, marking a 95% reduction since 1988 due to increased immunization efforts.[4] Regional disparities High-Burden Area; South Asia and Sub-Saharan Africa account for the majority of tetanus cases and deaths. In 2019, these region reported infection rates exceeding 5 per 100,000 people.[5] Developed countries; Tetanus is high-income countries, largely due to effective vaccination programs. For instance, the United States fewer than 50 cases annually among vaccination individuals or those lacking booster shots.[6] Global Coverage; as of 2023, 84% of infants worldwide received three doses of the diphtheria-tetanus-pertussis ([DPT) vaccine. However, coverage varies, with some regional logging behind.[7] Impact of vaccination; increased vaccination has significantly reduced tetanus cases globally. For examples, South Asia saw a decline from nearly 400,000 infections in 1990 to around 30, 0000 in 2019.[8] Demographic variation Age and Gender; in low-income regions, newborns are at the highest risk for tetanus. Conversely, in the high-income areas, individuals aged 70 and above account for a significant proportion of cases. Male generally experience a higher disease burden than females influenza vaccination state that pregnant woman should have the highest priority for seasonal influenza vaccination or expansion of influenza immunization programmer, in 2012 the world health organization called for maternal and neonatal tetanus elimination (MNTE), which is defined as than fewer one neonatal tetanus case per 1,000 live births in all district per year. key components of this initiative include routine immunization of pregnant women and women of reproductive age with tetanus toxoid containing vaccine (TTCV), hygienic delivery and cord care practices and strengthening neonatal tetanus surveillance.[9] If full course of tetanus vaccination is administered to the women childbearing age, this disease would be eradicated among the women of this age as well as among neonate (babies from birth to 28days of age).[10] the great achievements in public health medicine throughout the world is the prevention of infectious disease through administration of vaccines. There are no other medical inventions not even the use of antibiotics that has the capacity of preventing so many disease deaths and disease as vaccination prevention administered through organized immunization programmed. Even though the discovery of

an introduction of vaccine actually occurred toward the end of 18 centuries. The potentials of vaccine and its capability in disease prevention was not well appreciated or organized.[11] Tetanus is cause by an infection with the bacterium clostridium tetani, which is commonly found in soil, saliva, dust and manure. The bacteria generally enter through a break in the skin such as a cut or puncture wound by a contaminated object. They produce toxic that interfere with muscle contractions, resulting in the typical symptoms. Diagnosis is based on presenting sign and symptoms the disease not spread between people.[12]

In Africa, tetanus remains public health concern particularly affecting maternal and neonatal populations. Despite global effort to eliminate the disease, the African region continues to report a substantial number of cases. Incidence and Mortality. Neonatal Tetanus; the WHO estimates that maternal and neonatal Tetanus (MNT) is responsible for approximately 110,000 deaths annually in the African Region. Notably, 16 out of the 28 countries with the highest MNT cases are in Africa, accounting for 90% of the global neonatal tetanus cases Report cases; in 2020, Africa reported over 7,700 tetanus cases, a significant increase from 3,606 cases in 2019.[13]

In sub-Saharan Africa, A study analyzing recent demographic and the health survey data found that only 49.8% of pregnant women of sub-Saharan Africa received two or more doses of the tetanus toxoid-containing vaccine. Factors such as age, education, household wealth, and access to health care services influenced vaccination rates.[14] East Africa; Research focusing on rural areas in ten East African countries revealed that 50.4% of women were protected against tetanus. Lower immunization rates were associated with factors like limited education, poverty, and inadequate access to health care facility.[15]

In Nigeria; Tetanus remains a significant public health concern particularly affecting neonates and children. Despite global effort to eliminate the disease, Nigeria continues to report a substantial number of cases annually. Incidence and mortality, neonatal tetanus; In Nigeria neonatal tetanus accounts approximately 20% of neonatal deaths. A study conducted at university of Port Harcourt Teaching Hospital reported that 30-50 cases of neonatal tetanus are admitted annually, with most affected infants being full-term and of normal birth weight. Case Fatality Rate; The case fatality ratio for tetanus in Nigeria is estimated at 43%, indicating a high mortality rate among affected individuals.[16] Regional variation; Southwest Nigeria, As of October 2020, the WHO declared the elimination of maternal and neonatal tetanus in the southwest geopolitical zone of Nigeria, making a significant public health achievement in that region.[17] Northeastern Nigeria; A cross-sectional study analyzing data from 312 mothers of neonatal tetanus babies in northeastern Nigeria revealed an unacceptably high prevalence rate of 28.8%. Although there was a decline in NNT cases from 26% in 2010 to 9% in 2023, still the overall prevalence remained a point of concerned.[18]

Risk factors; the study identified several factors contributing to the high prevalence of NNT in the region were antenatal care attendance (ANC); Mothers who give birth to NNT babies received significant fewer or no ANC visit ($p<0.001$), traditional birth attendance (TBAs) There was a significant lack of attention from trained TBAs among these mothers ($p<0.001$) and umbilical cord care; Improper umbilical treatments were significantly more common ($p<0.001$)

Nationally, only an estimated 47% of Nigerian infants receive the third dose of the Diphtheria-pertussis-Tetanus (DPT) vaccine, and about 60% of women receive tetanus toxoid during pregnancy. This suboptimal vaccination coverage contributes to the persistence of tetanus in region like northeastern Nigeria.[19] In the same vein Jigawa State, Nigeria, Tetanus remain a significant public health issue particularly among neonates. A retrospective study conducted at Rasheed Shekoni Specialist Hospital in Dutse, the State capital, reviewed neonatal tetanus cases admitted between January 2016 and December 2018. The findings revealed that out of 837 neonatal admissions during this period, 36 cases (4.3%) were diagnosed with tetanus. The majority of this cases (96.7%) were male, with a male-to-female ratio of 2:1. The infants' ages ranged from 6 to 22 days, with a mean age of approximately 10.7 days. Notably, only 28.6% of mothers had received tetanus toxoid vaccination during antenatal care. The predominant route of infection was identified as traditional uvulectomy, accounting for 80% of the cases. The study reported a high mortality rate of 53.3% among the affected neonates.[20] further research assessing tetanus seroprotection among children under 15years old in Nigeria highlighted regional disparities. In the northeastern zone, which includes Jigawa State, less than 50% of children aged 10-14 years had minimal seroprotection against tetanus. This low level of immunity underscores the vulnerability of children in this region to tetanus infections.[21] However, this study seeks to assess the prevalence and determinants of Td uptake among pregnant women attending antenatal clinic in Primary health care center Kondiko Town of Gwaram LGA, Jigawa State.

Methodology

Study area

The study was carried out at the Primary Health Care Centre, Kondiko Town, located in Gwaram Local Government Area of Jigawa State, Nigeria. Gwaram LGA has 272,582 people while Jigawa State has 27 Local Government Areas with a population of 4,361,002 million according to the 2006 census by the National Population Commission. Kondiko is a rural town where the majority of the populations are engaged in farming and small-scale trading. The PHC in this town serves as the major healthcare provider, especially for maternal and child health services, including antenatal care and immunization programs. However, Jigawa State has 66% vaccination coverage for routine immunization.

Study design

A descriptive cross-sectional design was used.

Study population

Pregnant women attending antenatal clinics at the Primary Health Care Centre, Kondiko Town were included while those that were severely sick or not around during the study were excluded.

Sample size determination

The sample size was determined using the Fischer's formula $n = Z^2pq/d^2$ and n=206 was obtained.

Sampling technique

A systematic random sampling technique was used to select respondents from the antenatal clinic register, After calculating the sampling interval, the first respondent was identified by selecting a random number between one and the sampling interval (by balloting method). Informed consent for eligible respondents was obtained and interviewed. Subsequent respondents were then identified by adding the sampling interval to the serial number of the first sampled respondent and process continued until the minimum sample size was exhausted.

Method of Data Collection

Data was collected using a pretested semi-structured, interviewer-administered questionnaire that consist the following sections: Section A: Socio-demographic data (age, education, parity, etc.), Section B: Knowledge of tetanus and immunization, Section C: Uptake of tetanus toxoid vaccine, Section D: Factors influencing Td acceptance. Two trained research assistants conducted the interview after obtaining consent from the respondents.

Data Analysis

Data were coded and entered into Statistical Product and Service Solutions (SPSS) version 25.0 for analysis. Descriptive statistics such as frequencies, percentages and charts were used to summarize the data.

Ethical Considerations

Ethical approval was obtained from the Jigawa State Primary Health Care Development Agency and permission was also obtained from the Primary Health Department and officer in charge of the PHC Centre, Kondiko. Informed consent was obtained from all respondents after the purpose, risks, and benefits of the study were explained. Participation was voluntary, and confidentiality of responses was strictly maintained. Respondents were informed of their right to withdraw at any stage of the study without any consequences.

Results

A total of 206 questionnaires were administered to the respondents with 100% response rate.

Section A: Socio demographic characteristics

Table 1: Socio-demographic characteristics of the respondents

Variables	Frequency n= 206	Percentage (%)
AGE 14-20 20-49	 118 88	 57 43
Marrital Status Married Single Divorced Widowed	102 0 68 36	50 0 33 17
Level Of Education No formal education Primary Secondary Tertiary	12 47 118 29	6 23 57 14
Occupation House wife Traders Civil servants Farmers Others	89 52 17 16 32	43 25 8 8 16
Religion Islam Christianity	206 0	100 0
Parity 0-5 5-above	127 79	62 38
Gestational Age 16weeks-24weeks 25weeks-40weeks	123 83	60 40
Number Of Anc Visit 1-4visit 4-8visit	93 113	45 55

Table 1 shows that majority of the respondents fall between 14-20 years with percentage of 118 (57) and 102 (50) were married, also 118 (57) have secondary level of education. Also in table 1 above 89 (43) are house wives, 123 (60) their gestational age fall between 16weeks-24weeks and lastly 113 (55) fall between 4-8 visits of ANC respectively.

Section B: Prevalence of Td Vaccine Uptake among the respondents

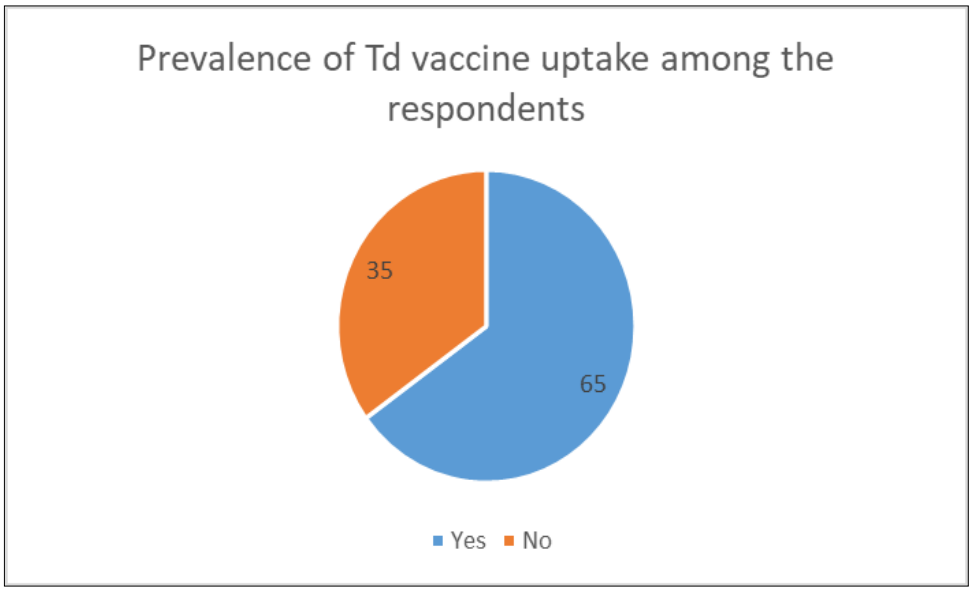

Fig 1: Prevalence of Td vaccine uptake among the respondents

The above pie chart shows the prevalence of Td vaccine uptake among the respondents However, the blue color from the chart is representing are the respondents belong to categories of Yes which has 65% and the coral color of the respondents are belong to categories of No which has 35% respectively.

Table 2: Td Vaccine Uptake among the respondents

Variables	Frequency n=206	Percentage (%)
Have you received the Td vaccine during this pregnancy?		
Yes	134	65
No	72	35
If yes, how many doses have you received?		
One	68	33
Two	54	26
More than two	12	6
Did you receive Td vaccine during previous pregnancies?		
Yes	129	63
No	77	37
If no, why have you not received Td vaccine? (Check all that apply)		
Not aware	9	4
Fear of side effect	27	13
Not offered at ANC	6	3
Religious/cultural reason	21	10
Others	14	7

Table 2 reveals that 134 (65) received Td vaccine during their current pregnancy, 68 (33) received only one dose of Td vaccine and 129 (63) received Td vaccine during their previous pregnancy. However, 27 (13) stated fear of side effect as their reason for not receiving Td vaccine, 21 (10) stated religious/cultural reason as their own reason.

Section C: Knowledge of Td vaccine

Table 3: Knowledge of Td vaccine among the respondents

Variable	Frequency n=206	Percentage (%)
Poor knowledge	106	51.5
Good knowledge	100	48.5

Table 3 above shows that 106 (51.5) have poor knowledge out of the 206 respondents while 100 (48.5) have good knowledge respectively.

Figure 2: The above pie chart shows good knowledge of the respondents 48.5% and poor knowledge 51.5%

Section D: Attitude toward Td Vaccine

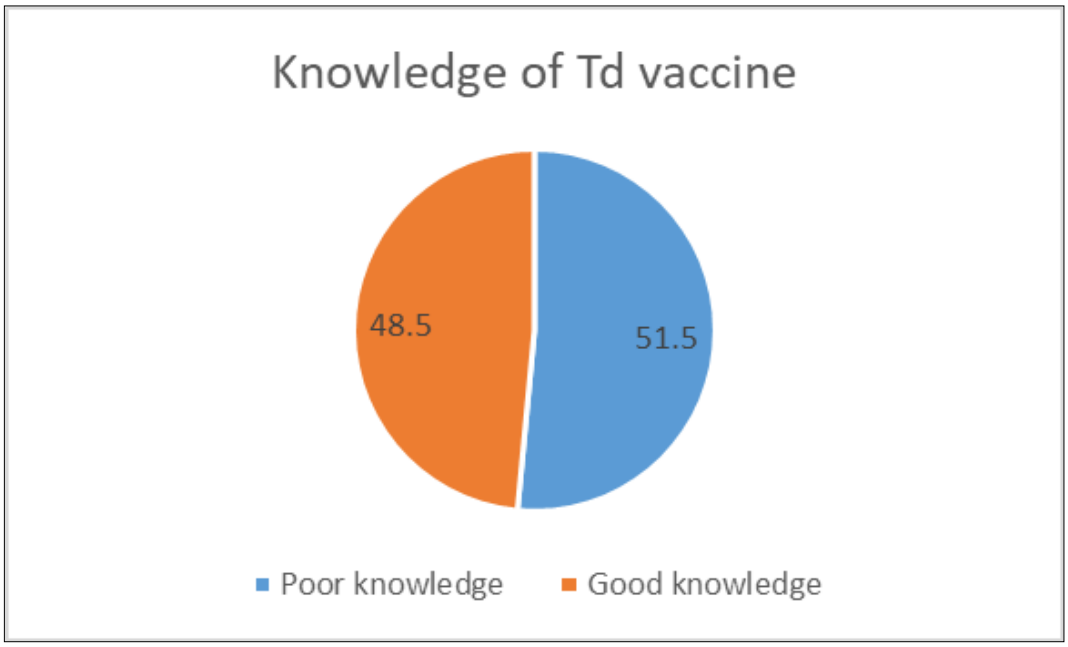

Fig 2: Knowledge of Td vaccine of the respondents

Table 4: Attitude of the respondents toward Td vaccine

Variable	Frequency n=206	Percentage (%)
Poor attitude	22	10.7
Good attitude	184	89.3

The table 4 above shows that 22 (10.7) of the respondents are having poor attitude and while 184 (89.3) were having good attitude respectively.

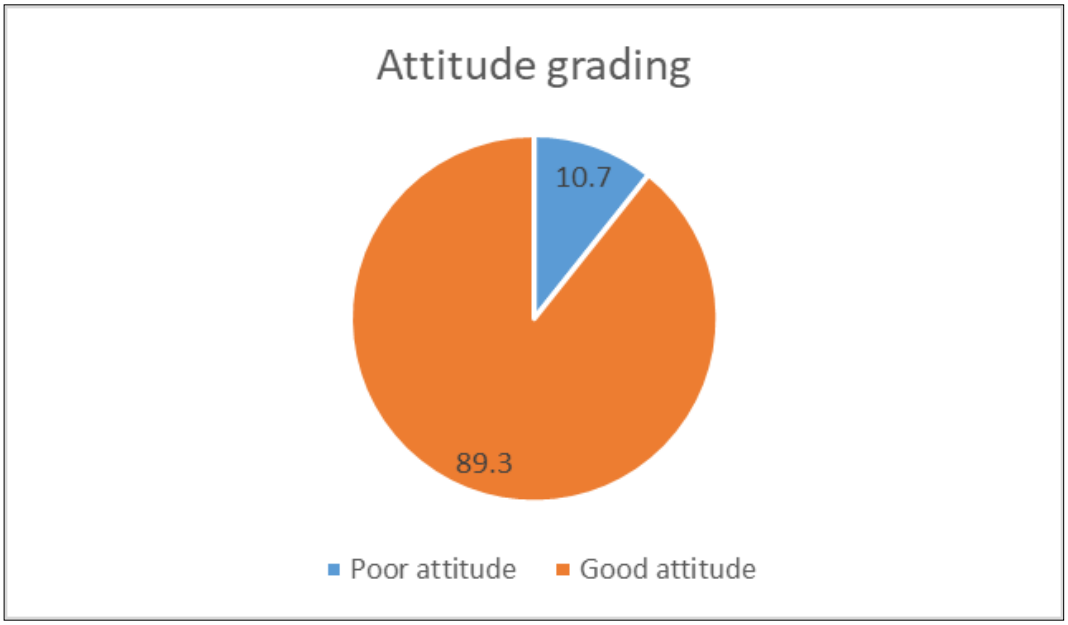

Fig 3: Attitude grading of the respondents

The above pie chart reveals good attitude of the respondents 89.3% and poor attitude 10.7%.

Section E: Perception toward Td Vaccine Uptake

Table 5: Perception of Td vaccine among the respondents

Variable	Frequency n=206	Percentage (%)
Poor perception	181	87.9
Good perception	25	12.1

The table 5 above shows that 181 (87.9) of the respondent have poor perception. However, 25 (12.1) of the respondents have good knowledge respectively.

Figure 4: The above pie chart represent good perception of the respondents 87.9% and poor perception 12.1%.

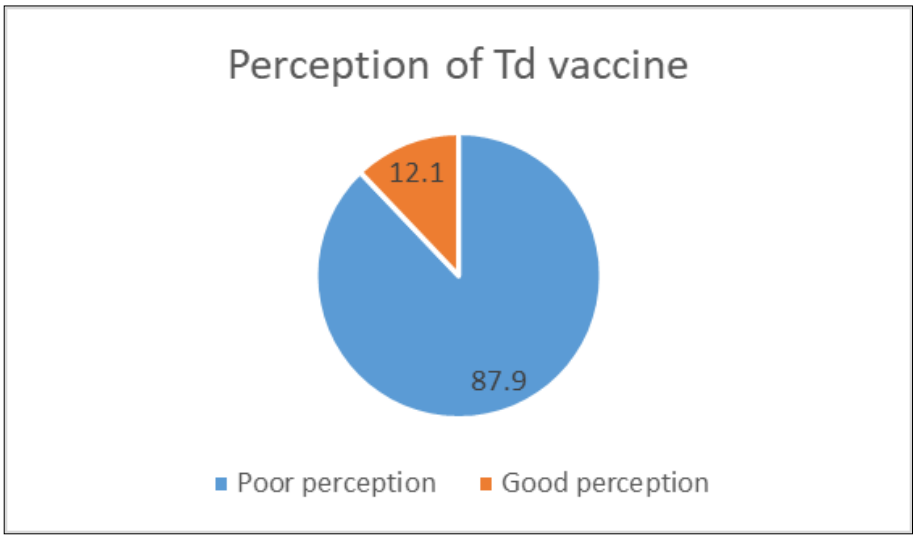

Fig 4: Perception of Td vaccine uptake of the respondents

Discussion

Most respondents (57%) were between 14–20 years, and among this group, Td vaccine uptake was relatively high. This may be attributed to the fact that younger women are more likely to be first-time mothers, who may be more eager to follow ANC advice. Conversely, older mothers with multiple children may perceive Td vaccination as unnecessary, especially if prior pregnancies were uneventful. Married women accounted for 50% of respondents, and marriage often increases access to ANC services due to spousal support. However, in patriarchal rural settings like Gwaram, husband's approval remains a significant determinant. Women without spousal support may be reluctant to seek ANC services or accept vaccines. Education played a decisive role in Td uptake. Women with secondary education (57%) were more likely to be vaccinated than those with no or primary education. Education empowers women with health literacy, increases their autonomy, and enhances their confidence in health services. This finding aligns with similar studies in Ethiopia, Uganda, and northern Nigeria, which consistently found positive correlations between education and immunization behavior.[21, 22, 23] Most respondents were housewives (43%), and many depended on their husbands for healthcare decisions and transport fare. Economic dependence reduces women's ability to seek and access ANC independently. Those engaged in petty trading or formal employment had better uptake due to financial empowerment and exposure to health education outside the home. Gestational age and number of ANC visits were strongly associated with Td uptake. About 55% of women had 4–8 ANC visits, and these women had a higher chance of completing their Td vaccination schedule. This supports WHO recommendations that at least four focused ANC visits significantly increase the likelihood of receiving maternal vaccines.[25, 26] Moreover, health worker influence was critical—when providers gave consistent, respectful, and clear health messages, women were more likely to accept the vaccine. However, in some cases, missed opportunities during ANC (e.g., no counseling or stock-outs) contributed to non-uptake. Some participants cited vaccine unavailability or long waiting times as barriers to completing doses. Even when women are willing, if vaccines are not available or health services are delayed, coverage drops. Logistics management at the PHC level, especially in rural Jigawa, remains a challenge. Fear of side effects was reported by 13% of non-vaccinated women. This shows how psychological factors such as fear, anxiety, and mistrust of health services—often reinforced by negative anecdotes from peers—can strongly deter vaccine acceptance. Additionally, women with positive attitudes but poor knowledge or perception (as found in this study) were still unlikely to complete the recommended Td doses, indicating that behavioral intention must be supported by consistent health education and confidence-building strategies.

In Kondiko Ward, the prevalence of Td vaccine uptake during the current pregnancy was found to be 65%, higher than the national average of 56% (NDHS 2018).[27] Despite this improvement, only 33% received one dose, and fewer received the full two-dose schedule. These figures indicate a substantial gap in complete immunization. In Dutse, urban areas of Jigawa, similar low full-dose coverage is observed despite better access. In Gombe and Maiduguri (North-East), uptake is lower, often below 50%, particularly in displaced and rural populations due to insecurity and service disruptions. Across Nigeria, Td2+ coverage remains below the 80% WHO target.[28] Globally, while Td vaccine has led to a 95% reduction in neonatal tetanus deaths, maternal Td coverage in low- and middle-income countries (LMICs) remains inconsistent. Nigeria, like many Sub-Saharan African nations, struggles with rural immunization gaps.[29] The prevalence of Td vaccine uptake during the current pregnancy among the respondents was found to be 65%, indicating that nearly two-thirds of pregnant women had received at least one dose of the tetanus-diphtheria (Td) vaccine. This finding is an important public health achievement for a rural setting like Kondiko Ward, Gwaram LGA, considering the challenges typically associated with maternal immunization in rural and hard-to-reach areas. The relatively high uptake (65%) in Kondiko can be attributed to improved ANC attendance, as over 55% of respondents reported 4–8 ANC visits. This aligns with national ANC guidelines and WHO recommendations encouraging a minimum of four contacts. However, despite this, only a portion of the women received the full two-dose Td schedule, and even fewer received three or more doses (which provide longer-term protection). This reflects a significant missed opportunity within the health system:

ANC visits are not being fully utilized to ensure complete immunization. This could be due to: Lack of adequate Td vaccine counseling by health workers, Irregular vaccine availability, Incomplete tracking or follow-up of Td vaccination history At the broader state level, Jigawa State remains one of the northern Nigerian states with maternal health challenges. Cultural barriers, low literacy rates, and male-dominated decision-making often limit women's access to maternal services, including immunization. In urban Jigawa (e.g., Dutse), uptake is slightly higher due to better infrastructure. However, disparities persist between urban and rural LGAs like Gwaram. While 65% uptake in Kondiko is a promising sign, it falls short of the 80% Td2+ coverage required by WHO for the elimination of maternal and neonatal tetanus.[30] Across northern Nigeria, Td uptake remains inconsistent. Studies in Gombe, Kano, and Katsina have shown coverage rates between 40–60%.[31, 32] In many of these regions, challenges include: Myths about vaccine safety, Distrust in government healthcare, Insecurity and lack of access to remote health centers. The 65% recorded in Kondiko is therefore relatively higher than the average for many other rural settings in the North, showing that targeted local interventions may be yielding results. At the national level, the Nigeria Demographic and Health Survey (NDHS) 2018 reports that only 56% of pregnant women received at least one dose of Td vaccine, and far fewer completed two or more doses.[33] Td uptake is typically higher in urban and southern regions than in northern rural areas. Therefore, the 65% uptake found in this study is above the national average, suggesting that ANC services in Kondiko PHC are reaching a significant proportion of women. However, Td dose completion remains low, and unless addressed, it limits the effectiveness of the program. Continental Perspective: Sub-Saharan Africa In Sub-Saharan Africa, the Td uptake situation mirrors that of Nigeria. According to WHO, only about 50% of pregnant women receive two doses of Td vaccine. The reasons are similar: Logistical barriers, Poor record-keeping, Limited health education, cultural and religious resistance. Nigeria accounts for a significant proportion of neonatal tetanus deaths in Africa, making improvements in Td coverage an urgent regional priority.[34] Globally, Td vaccine has drastically reduced neonatal tetanus mortality by over 95% since 1988.[35] High-income countries have virtually eliminated the disease through routine immunization and strong ANC systems. In contrast, LMICs like Nigeria continue to face gaps in Td coverage due to systemic issues such as poor healthcare infrastructure, inadequate workforce training, and lack of funding. The finding that 65% of pregnant women in Kondiko received Td vaccine shows that global goals can be approached even in low-resource settings, provided that ANC services are strengthened and community engagement is prioritized.

In the study, 51.5% of respondents had poor knowledge of Td vaccines. This shows a critical deficiency in health communication at the ANC level. Many respondents were unaware that Td protects both mother and baby, or that multiple doses are required. In Jigawa State, this poor knowledge is partly due to low female education rates and reliance on traditional healers. In rural Gwaram LGA, most women lack access to information sources beyond what is provided during ANC visits. In South-West and South-East Nigeria, where maternal literacy is higher, knowledge scores are generally better, leading to higher Td uptake. In the broader African context, studies in Ethiopia, Uganda, and Tanzania report similar knowledge gaps among pregnant women, especially in rural areas with low media access.[36, 37, 38] In Kondiko Ward, where the study was conducted, the fact that more than half of the pregnant women lacked basic knowledge of the Td vaccine is significant. Despite the relatively high rate of antenatal clinic (ANC) attendance, the quality of health education and counseling during ANC sessions appears insufficient. Most women were unaware of: The required number of Td doses during pregnancy, The need for more than one dose for full protection, The protective effect of Td on the newborn, The timing and schedule of the doses, this highlights a missed opportunity by health workers to deliver effective vaccine-related information during ANC visits. Moreover, educational level also played a crucial role—women with secondary education and above showed better knowledge than those with primary or no formal education, a trend consistent with studies in other parts of Nigeria. In Jigawa State, particularly in rural areas like Gwaram, the issue of poor knowledge is compounded by: High levels of illiteracy, Early marriage, Limited access to formal health education, Cultural dependence on traditional birth attendants (TBAs). Even though Td vaccines are offered free during ANC, awareness about the importance of completing the doses is low. A study conducted in Dutse revealed that many pregnant women who received the Td vaccine could not explain its purpose or the number of doses required.[39] Across northern Nigeria, low Td vaccine knowledge among pregnant women has been consistently documented. For example: A study in Kano reported that over 60% of women attending ANC had little or no knowledge of Td vaccine.[40] In Bauchi State, many women believed Td vaccine was only given to prevent miscarriage, not tetanus.[41] In Gombe, over half of the respondents were unaware that the vaccine protects the baby, not just the mother.[41] These findings, when compared with the 51.5% poor knowledge observed in Kondiko, suggest that the issue is systemic—not merely a local problem. Weak health education systems and poor information dissemination continue despite limited knowledge, the study found that 89.3% of respondents exhibited a positive attitude toward Td vaccination. This paradox of high attitude but low knowledge suggests that women are open to vaccination but lack proper information or encounter barriers in practice.

In many northern Nigerian settings, including Gombe and parts of Kano, similar patterns exist. Women often trust health workers but are not empowered to seek vaccination independently due to cultural norms and male decision-making. Nationally, studies in Lagos and Port Harcourt show more consistent alignment between positive attitude and actual uptake due to stronger health promotion programs. However, attitude alone is not sufficient without corresponding knowledge and access. Globally, WHO reports confirm that in LMICs, attitude is often shaped more by trust in healthcare providers than detailed understanding of immunology — making health worker communication essential.[42] The results of this study showed that 184 out of 206 respondents (89.3%) had a positive attitude toward Td vaccine uptake, while only 22 (10.7%) exhibited a poor attitude. This is a significant finding considering that more than half of the respondents had poor knowledge of the Td vaccine, yet still held a favorable view of it. This discrepancy between knowledge and attitude reflects a

complex relationship influenced by social norms, trust in healthcare workers, and cultural acceptability. Positive attitudes were demonstrated through: Willingness to receive the vaccine when offered, Trust in the advice of health workers, encouraging other women in the community to take the vaccine However, some of those with a positive attitude still did not complete the recommended Td doses, indicating that a positive attitude alone is not enough to ensure full vaccine coverage without adequate knowledge and access. Within Jigawa State, especially in rural communities like Gwaram LGA, attitude toward vaccination is often influenced by community norms, religious teachings, and past experiences with health interventions. Despite widespread cultural conservatism in northern Nigeria, positive attitude scores toward maternal health interventions have been increasing, largely due to: Greater exposure to health education via ANC, Increased use of female community health workers, Active involvement of religious and traditional leaders in immunization campaigns, In places like Dutse, Hadejia, and even rural Gombe, similar studies have reported positive attitudes ranging from 70–85%, but this does not always translate into action done.

The study found that 87.9% of women had poor perception of Td vaccine — believing it could cause side effects like infertility, miscarriage, or harm to the fetus. This is a significant barrier to uptake, despite good attitude. In Gwaram LGA and across Jigawa, such misconceptions are rooted in traditional beliefs and misinformation. Religious concerns, myths from community members, and past experiences all affect perception. In the South-South and South-East regions, perception is often better due to active campaigns. But even in those zones, marginalized communities like riverine areas may still harbor vaccine-related fears. At the continental level, similar misperceptions are recorded in Mali, DRC, and Ethiopia. WHO and UNICEF have emphasized the need to combat vaccine myths to improve Td uptake in Africa.[43] The findings of this study revealed that 181 out of 206 respondents (87.9%) had a poor perception of the Td vaccine, while only 25 (12.1%) had a good perception. This is particularly striking, considering that a significant proportion of the same respondents had good attitudes (89.3%) and reasonable levels of vaccine uptake (65%). The data suggest a paradox in vaccine behavior—even though some women were vaccinated and held a positive attitude, their perception was still poor. Many women in Kondiko expressed fears about: Vaccine safety, especially concerns about sterility or miscarriage, Side effects, such as fever or fatigue, which were exaggerated by rumors, Religious or cultural beliefs against modern medicine, Mistrust in vaccines provided "free" by the government. Some respondents stated they had heard from others that the Td vaccine could “make women infertile,” a misconception that has been documented in other northern Nigerian communities.[44] These misperceptions, often rooted in hearsay and lack of proper communication, hinder full compliance and vaccine confidence. In rural areas of Jigawa State—including Gwaram, Ringim, and Birnin Kudu—deep-seated myths about vaccines persist. Td vaccine, though offered during ANC, is often confused with family planning injections or seen as an “unnecessary addition” to routine care. These misguided perceptions are fueled by: Low literacy levels, Cultural restrictions on female health autonomy, The influence of untrained traditional birth attendants (TBAs) Similar findings have been reported in studies conducted in Kano, Bauchi, and Yobe, where 70–85% of women either had no idea what Td vaccine was for or believed it could harm their unborn baby.[45, 46] Across Nigeria, especially in rural and underserved communities, vaccine misperceptions remain a major barrier to uptake. According to the NDHS 2018, despite increasing access to maternal health services, misinformation and distrust prevent many women from taking full advantage of those services. In the southern parts of Nigeria (e.g. Lagos, Anambra, Cross River), perception is generally better due to: Higher education levels, better exposure to health information, Greater trust in healthcare providers. In contrast, in many parts of the north—including Jigawa—rumors and fear spread more quickly than facts, especially where community-based education is lacking. Studies across sub-Saharan Africa reflect similar trends. In Ethiopia, for instance, 60% of pregnant women surveyed expressed fear that Td vaccine could cause pregnancy loss.[47] In Uganda, some women believed the vaccine was meant to “weaken African fertility,” a false narrative spread during COVID-19 vaccination campaigns that spilled over into routine immunizations like Td.[48] Such misperceptions are powerful barriers, especially when compounded by cultural conservatism and gender inequality. Globally, countries that have eliminated maternal and neonatal tetanus have done so not just through vaccine availability but also by building public trust. In countries like Sri Lanka, Egypt, and Brazil, community-based education programs, consistent health messaging, and culturally sensitive outreach helped reshape public perception over time. In contrast, in many low- and middle-income countries, especially where health literacy is low, misperceptions continue to derail immunization efforts—even when the services are accessible. The implication of this study’s findings is that poor perception remains one of the strongest hidden barriers to full Td vaccine coverage. Even if ANC services are present and women are willing to be vaccinated, negative perception can: Lead to vaccine hesitancy, Delay follow-up doses, Cause dropout from ANC programs, influence other women in the community to avoid immunization This misperception also undermines the work of health workers, as it leads to low trust and fear-based rejection of health advice.

Conclusion

This study found low level of knowledge and perception with positive attitude toward the vaccine. Educational level, number of antenatal visits and cultural factors are the determinants. Strengthening health education and engaging community leaders are essential strategies to promote Td uptake which will improves maternal and neonatal health outcomes.

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