ISSN: 2998-8179

Columbia Journal of Health Sciences and Nursing

Research Article

AN ANALYSIS OF TETANUS TOXOID VACCINATION UPTAKE AMONG FEMALE UNDERGRADUATES IN LAGOS

Balogun Abiola Temitope

Department of Midwifery, Lagos State College of Nursing, Igando, Lagos State, Nigeria.

DOI:10.5281/zenodo.19660096

Abstract

Tetanus is a life-threatening disease caused by toxins produced by *Clostridium tetani*, with an estimated global maternal and neonatal mortality of 309,000 and a case fatality rate of 35%. Women of reproductive age are recommended to receive consecutive doses of tetanus toxoid (TT) vaccine to ensure long-term protection. Complete TT immunization provides protective immunity lasting 10 to 30 years, whereas incomplete vaccination leaves individuals vulnerable, particularly after tetanus-prone injuries. Despite the proven effectiveness of TT, financial constraints often limit vaccine access, necessitating donor support to enhance immunization coverage. Ensuring full adherence to the TT schedule is crucial for preventing maternal and neonatal tetanus and protecting against tetanus following injuries sustained in daily activities or specialized settings such as military training. Strengthening awareness and uptake of TT vaccination remains an essential public health strategy to reduce tetanus-related morbidity and mortality among women of reproductive age.

Keywords: Tetanus, Tetanus Toxoid, Vaccination Uptake, Women's Health, Immunization

INTRODUCTION

Tetanus is a perilous illness induced by toxic substances. It is associated with a 35% mortality rate, and 309,000 fatalities are related to maternal or neonatal tetanus (Gelaw et al., 2023). Women of reproductive age are advised to have consecutive doses of tetanus toxoid (TT) immunisation according to the schedule for enduring protection against tetanus (WHO, 2019). Tetanus infection is a severe non-communicable disease resulting from toxins generated by the bacteria Clostridium tetani, which can be found in many environments. Its spores are present in the soil and dust of several regions. A completed primary course of TT immunisation elicits protective immunity lasting a minimum of 10 to 30 years; those who have not finished a primary series may necessitate TT. Due to the substantial fiscal burden of the vaccine, donor assistance persists in facilitating the nation's endeavour to achieve immunisation coverage. To address maternal and neonatal tetanus, tetanus toxoid (TT) vaccination must be completely implemented for women of reproductive age. TT must also be advocated for in the context of injuries sustained during sports or activities like as military training camps. Tetanus-prone wounds require passive immunisation, and it is imperative to adhere to the completion of TT regimens (WHO, 2019).

A study aimed at evaluating the understanding of tetanus toxoid vaccination revealed that the majority of young women possessed insufficient knowledge regarding neonatal tetanus, with some expressing a willingness to receive the vaccination, while only a minority had already been immunised (Adegbenro et al 2019). A research by Komal (2019) on the knowledge, attitudes, and practices of tetanus toxoid among reproductive-age women in Rawalpindi revealed that just 8.88% of participants had knowledge of or had heard of tetanus, while the majority

ISSN: 2998-8179

Columbia Journal of Health Sciences and Nursing

Research Article

(318 or 91.2%) were unaware. A significant proportion of responders (91.12%) were uninformed about tetanus toxoid immunisation. Only 31 responders (8.88%) indicated familiarity with TT vaccine.

A study by Fouad (2022) on the determinants of tetanus toxoid vaccination among pregnant women in Egypt revealed that over 75% of respondents exhibited a high level of knowledge regarding tetanus vaccination, 50%-75% demonstrated a moderate level of knowledge, and less than 50% displayed a low level of knowledge concerning tetanus toxoid vaccination. Awosan (2019) conducted a study on the perception and utilisation of tetanus toxoid immunisation among women in North-west Nigeria. The findings indicated that just 113 (51.1%) of the 221 respondents knowledgeable about tetanus toxoid (TT) immunisation felt it offers protection against tetanus for both mother and newborn. A majority of responders (150, 67.9%) erroneously believed that TT immunisation is exclusively indicated for pregnant women. A majority of respondents perceived TT immunisation as helpful in preventing tetanus infection (73.3%) and safe for both mother and infant (79.2%); nevertheless, around 10.9% held the erroneous belief that it is detrimental to the newborn. Approximately 68.8% of respondents erroneously believed that a single dose of TT immunisation provides protection against tetanus for several years, whereas around 50.7% mistakenly thought that two or more doses confer lifelong immunity to tetanus. In his 2019 study on knowledge and conduct about tetanus toxoid immunisation, Mathias found that the majority of women, 236 (93.7%), had gotten at least one dose of TT, 123 (52.1%) had received up to five doses, and 184 (78%) said that they had finished the immunisation schedule.

Therefore, the study investigated the knowledge and perception of tetanus toxoid vaccination among female undergraduate students at Lagos State University, Ojo. Specifically, it assessed the level of knowledge about tetanus toxoid vaccination among these students, evaluated their perceptions regarding the vaccination, and determined the extent of its utilization among female undergraduate students of reproductive age at the same institution.

MATERIAL AND METHODS

This study employed a descriptive cross-sectional design to assess the knowledge and perception of tetanus toxoid vaccination among female undergraduate students at Lagos State University, Ojo. This approach was deemed appropriate for the investigation, as it allowed for a detailed examination of the students' understanding and attitudes towards the vaccination at a single point in time. The study utilised a questionnaire specifically designed to gauge the knowledge and perceptions of tetanus toxoid vaccination among the participants. The target population comprised female undergraduate students from the Faculty of Education, including those in the Department of Language, Art, and Social Science Education, as well as Educational Management, within the age range of 15 to 30 years.

The inclusion criteria for the study were female undergraduate students enrolled in the aforementioned departments. Conversely, students who were not present in the faculty during the distribution of the questionnaire, those who were ill during the data collection period, and those who did not provide consent to participate were excluded from the study. The sample size for this study was determined using the Taro Yamane formula, with a 95% level of confidence and a 5% margin of error, resulting in a calculated sample size of 212. To account for

ISSN: 2998-8179

Columbia Journal of Health Sciences and Nursing

Research Article

potential attrition, an additional 10% was added, bringing the final sample size to 233. The reliability of the instrument was assessed among 23 female undergraduate students from the Department of Mathematics Education at LASUED, yielding a reliability coefficient of 0.7, which indicated a satisfactory level of reliability for the study's purposes.

Permission letter was collected at the department of Midwifery, LASCON and same was taken to HREC LUTH for ethical approval with reference number ADM/DSCST/HREC/APP/6394. The researcher made use of an introductory letter stating the purpose of the research and soliciting for support to embark on the study in the area. Permission was also taken from the authority of Lagos State University. Gate keeper's permit was collected from the University before commencing the study. Oral and written inform consent was obtained from the respondents before participating in the study. Confidentiality was strictly maintained concerning all information and participation was made voluntarily.

The administration of questionnaires took place over a two-week period, facilitating thorough data collection among female undergraduate students. A total of 233 questionnaires were distributed and subsequently retrieved. The collected data were analysed using the Statistical Package for Social Sciences (SPSS), version 26. Each completed questionnaire was carefully reviewed to ensure it was complete and suitable for analysis. The research questions were examined using frequency counts and percentages, while the research hypothesis was tested with the chi-square method at a 0.05 level of significance.

RESULTS

Table 1: Socio Demographic Data of Respondents

Variables	Responses	Frequency	Percentage
Age	15-20 years	83	35.6%
	21-25 years	117	50.3%
	26-30 years	28	12%
	Above 30 years	5	2.1%
Marital Status	Single	228	97.9% 2.1% 0%
	Married	5	0%
	Divorced Others	0	
		0	
Ethnicity	Yoruba	164	70.4%
	Igbo	25	10.7%
	Hausa	24	10.3%
	Others	20	8.6%
Religion	Christianity	156	67%
	Islamic	77	33%
	Others	0	0%

ISSN: 2998-8179

Columbia Journal of Health Sciences and Nursing

Research Article

Institutional Levels	100 level	85	36.6%
	200 level	48	20.6%
	300 level	22	9.4%
	400 level	29	12.4%
	500 level	49	21%

Table 1 revealed that the majority of respondents were in the age range of 21-25 years (50.3%), followed by those aged 15-20 years (35.6%). This indicates that a significant proportion of the participants were relatively young adults, which may reflect the typical age range of undergraduate students at the institution. The data showed a predominance of single individuals (97.9%), suggesting that the student population largely consists of those not yet married. Ethnically, the majority of respondents identified as Yoruba (70.4%), which aligns with the regional demographics of Lagos State, where the university is located. In terms of religion, Christianity was the predominant faith among the respondents (67%), with Islam being the second most common (33%). The distribution across institutional levels showed that most respondents were in their first year (100 level) of study (36.6%), followed by those in their final year (500 level) at 21%. This distribution reflects a balanced representation of students from different stages of their undergraduate education.

Research Question 1: What is the level of knowledge of tetanus toxoid vaccination among the female undergraduate students at LASU?

Table 2: Responses on Knowledge on Tetanus Toxoid (Tt) Vaccination

Variables	Responses	Frequency	Percentage
Have you ever heard about tetanus toxoid vaccination?	Yes	213	91.5
	No	5	2.1
	Not sure	15	6.4
First source of information	School	68	29.2
	Family/friends	92	39.5
	Health workers	63	27
	News/media	10	4.3
Number of doses taken	One	39	16.7
	Two	50	21.5
	Three	49	21
	Four	15	6.4
	Five	80	34.4
Tetanus toxoid vaccine should be taken to prevent	Toxoid	5	2.1
	Tetanus injection	218	93.6
	Bacterial infection	10	4.3
	Virus infection		0.0

ISSN: 2998-8179

Columbia Journal of Health Sciences and Nursing

Research Article

A lady should start taking tetanus toxoid vaccine	After sustaining an open/ piercing injury	88	37.8
	During pregnancy	59	25.3
	15 years and above	61	26.2
	Don't know	25	10.7

Table 2 indicated that almost all 213(91.5%) of respondents have heard about tetanus toxoid vaccination as less than half 92(39.5%) reported family/friends as source of information while very few 10(4.3%) reported news/media as source of their information about tetanus toxoid vaccination. Few 39(16.7%) respondents reported one dose to be taken while less than quarters 50(21.5%) reported two doses, less than quarters 49(21%) reported three doses, very few 15(6.4%) reported four doses and less than half 80(34.4%) reported five doses. Almost all 218(93.6%) of respondents reported that tetanus toxoid vaccine should be taken to prevent tetanus infection.Less than half 88(37.8%) of respondents reported a lady should start taking tetanus toxoid vaccine after sustaining open/piercing injury while slightly more than quarters 59(25.3%) reported during pregnancy, more than quarters 61(26.2%) reported 15 years and above and very few 25(10.7%) reported they don't know.

Research Question 2: What is the perception of tetanus toxoid vaccination among the female undergraduate students at LASU?

Table 3: Responses on Perception on Tetanus Toxoid Vaccination

Variables	Responses	Frequency	Percentage
Tetanus toxoid vaccine should be taken only when pregnant	Strongly Agree	5	2.1
	Agree	25	10.7
	Disagree	139	59.7
	Strongly Disagree	64	27.5
Tetanus toxoid vaccine is expensive and scarce	Strongly Agree	10	4.3
	Agree	40	17.1
	Disagree	116	49.8
	Strongly Disagree	67	28.8
The vaccine is painful during and after administration	Strongly Agree	48	20.6
	Agree	121	51.9
	Disagree	54	23.2
	Strongly Disagree	10	4.3
It causes miscarriage and infertility	Strongly Agree	4	1.7
	Agree	10	4.3
	Disagree	117	50.2
	Strongly Disagree	102	43.8

ISSN: 2998-8179

Columbia Journal of Health Sciences and Nursing

Research Article

Fever occurs after taking the vaccine	Strongly Agree	14	6
	Agree	103	44.2
	Disagree	68	29.2
	Strongly Disagree	48	20.6

Table 3 shows that majority 203(87.2%) disagreed that tetanus toxoid vaccine should be taken only when pregnant, few 20(12.8%) agreed. Slightly less than half 183(78.6%) of respondents disagreed that tetanus toxoid vaccine is expensive and scarce, less than quarters 50(21.4%) agreed. Majority 169(72.5%) agreed that the vaccine is painful during and after administration, less than quarters 64(27.5%) disagreed. Slightly more than half of respondents 117(50.2%) of respondents disagreed that it causes miscarriage and infertility while less than half 102(43.8%) reported strongly disagree. Less than half 103(44.2%) of respondents agreed that fever occurs after taking the vaccine while more than quarters 68(29.2%) disagreed, less than quarters 48(20.6%) reported strongly disagree and very few 14(6%) reported strongly agree.

Research Question 3: Are the students utilizing tetanus toxoid vaccination?

Table 4: Responses Utilization of Tetanus Toxoid Vaccine

Variables	Responses	Frequency	Percentage
Have you ever received tetanus toxoid vaccine?	Yes	101	43.3
	No	97	41.7
	Not sure	35	15
How many times have you received tetanus toxoid vaccine	One	84	36.1
	Two	0	0
	Three	37	15.9
	Four	5	2.1
	Five	5	2.1
	None	102	43.8
Did you encourage others to take it?	Yes	165	70.8
	No	48	20.6
	Not sure	20	8.6
Did you complete tetanus toxoid immunization schedule?	Yes	54	23.2
	No	134	57.5
	Not sure	45	19.3
Did you comply to the appointment as given by the health provider	Yes	97	41.7
	No	101	43.3
	Not sure	35	15

ISSN: 2998-8179

Columbia Journal of Health Sciences and Nursing

Research Article

Table 4 shows that less than half 101(43.3%) of respondents have received tetanus toxoid vaccine in the past while less than half 97(41.7%) have not and very few 35(15%) reported they do not know. More than quarters 84(36.1%) reported one time to have received tetanus toxoid vaccine while few 37(15.9%) reported three times, very few 5(2.1%) reported 4 times, very few 5(2.1%) reported five times and less than half 102(43.8%) reported none.

Test of Hypothesis

Ho1: There is no significant relationship between the level of knowledge and perception of tetanus toxoid vaccination among the respondents.

Table 5: Chi-Square analysis to determine significant relationship between the level of knowledge and perception of tetanus toxoid vaccination among the respondents

Knowledge on Tetanus Toxoid (Tt) Vaccination	**Perception on Tetanus Toxoid Vaccination**							
Have you ever heard about tetanus toxoid vaccination?	Tetanus toxoid vaccine should be taken only when pregnant							
	Strongly Agree	Agree	Disagree	Strongly Disagree	Total	ChiSquare (X^2) value	Df	P-value
Yes	5	25	124	59	213	593.524	90	0.000
No	0	0	5	0	5			
Not Sure	0	0	10	5	15			
Total	5	25	139	64	233			

Table 5 shows that there is significant relationship between the level of knowledge and perception of tetanus toxoid vaccination among the respondents as p-value equals 0.000 which is lesser than statistically significant value 0.05. The chi-square value is 593.524 at 90 degree of freedom (df). Since p-value 0.000 is lesser than statistically significant value 0.05 therefore, null hypothesis is rejected and alternate hypothesis is accepted.

DISCUSSION

The study's findings indicated that nearly all respondents were aware of tetanus toxoid immunisation. Fewer than half identified family or friends as their source of knowledge, while over a quarter cited schools, another quarter mentioned health workers, and a minimal number referred to news or media on tetanus toxoid vaccine. A minority of respondents indicated receiving one dosage, while fewer than a quarter reported two doses, fewer than a quarter reported three doses, very few reported four doses, and less than half reported five doses. This contradicts the findings of Mehanna et al. (2020), which indicated that a significant majority of women (89.7%) were either

unaware of or misinformed about the total amount of TTV doses required during their reproductive years. The majority of responders indicated that the tetanus toxoid vaccination is necessary to prevent tetanus infection, while a minority mentioned bacterial infections, and an even smaller number referred to toxoid infections. Fewer than half of the respondents said that a woman should commence the tetanus toxoid vaccination following an open or penetrating injury, while slightly over a quarter suggested it should occur during pregnancy. More than a quarter reported that vaccination should begin at age 15 and above, and a minimal number expressed uncertainty.

The study's findings indicated that the majority opposed the notion that the tetanus toxoid vaccination should be administered solely during pregnancy, while over a quarter expressed severe disagreement; a minority agreed, and an even smaller fraction strongly agreed. Approximately 45% of respondents disputed that the tetanus toxoid vaccination is expensive and rare, while over 25% strongly disagreed, less than 25% agreed, and a minimal number strongly agreed. The majority concurred that the vaccination is painful during and after injection, whereas less than a quarter claimed strong agreement, fewer than a quarter disagreed, and very few expressed severe disagreement. Just over half of the respondents disputed that it caused miscarriage and infertility, however less than half expressed significant disagreement. Fewer than half of the respondents concurred that fever develops post-vaccination, while over a quarter expressed disagreement; less than a quarter stated severe disagreement, and very few indicated strong agreement.

The study's findings indicated that fewer than half of the respondents had gotten the tetanus toxoid vaccine previously, while a similar proportion had not, and only a small number stated uncertainty over their vaccination status. Over a quarter of respondents indicated having gotten the tetanus toxoid vaccine once, while a minority claimed receiving it three times, an even smaller number reported four times, and an insignificant handful reported five times; fewer than half reported having had no vaccinations at all. The majority of respondents did not finish the tetanus toxoid immunisation schedule, while less than a quarter confirmed its completion; relatively few were uncertain. This aligns with Awosan (2019), which indicated that just almost half, 113 (51.1%) of the 221 respondents aware of tetanus toxoid (TT) immunisation, felt it safeguards both the mother and the newborn from tetanus. The majority of responders indicated that they advocate for others to receive the immunisation. Fewer than half of the respondents adhered to the appointment as instructed by the healthcare professional, while a similar proportion indicated non-compliance, and a minimal number expressed uncertainty.

CONCLUSION

This study concludes that participants have poor knowledge about Tetanus toxoid vaccination. However, this study participants have satisfactory perception on tetanus toxoid vaccination and less than half 101(43.3%) of respondents have received tetanus toxoid vaccine in the past. It further revealed that there is significant relationship between the level of knowledge and perception of tetanus toxoid vaccination among the respondents as p-value equals 0.000 which is lesser than statistically significant value 0.05. The chi-square value is 593.524 at 90 degree of freedom (df).

Recommendations

In view of the findings stated, the following recommendation are made:

1. Educational programs aimed at female undergraduate students should be developed and implemented to augment their understanding of tetanus toxoid immunisation.
2. Employment of diverse communication channels, including workshops, seminars, and instructional materials, to convey precise and accessible information regarding the significance, safety, and advantages of tetanus toxoid immunisation.
3. Promoting the incorporation of information on tetanus toxoid vaccination into health education curriculum for undergraduate students, especially those studying healthcare-related disciplines.
4. Promoting coordination between educational institutions and healthcare professionals to guarantee the consistent dissemination of appropriate information regarding tetanus toxoid immunisation to pupils.
5. Periodically evaluate and modify immunisation policy on college campuses to maintain alignment with current guidelines and best practices, if appropriate. This may necessitate cooperation with public health officials and lawmakers.

REFERENCES

Abah, M. G., Asuquo, O. A., & Inyangetoh, E. C. (2019). Knowledge and behaviour towards tetanus toxoid immunization in South-South Nigeria.

Adegbenro, C. A., Olowookere, S. A., Fehintola, F. O., Adegbenro, P. A., & Orioke, O. T. (2019). Knowledge about and preventive practices against neonatal tetanus among young Nigerian women.

Ajmal, K. D. B. E., Azam, D., Pervaiz, D. F., Akhtar, D. S., Mahmood, D. H., & Yousaf, D. S. (2019). Knowledge, attitude and practice regarding tetanus toxoid vaccination in reproductive women in Rewalpindi.

Awosan, K. J., & Hassan, M. (2019). Perception and utilization of tetanus toxoid immunization among pregnant women attending a tertiary centre in North-West Nigeria.

El-Adham, F., El-Nagar, A. E., & Hashem, S. M. (2022). Determinants of tetanus toxoid use among pregnant women.

Gabriel-Job, N., & Ide, Y. L. E. (2019). Tetanus toxoid status and determinants of uptake among women in Etche Local Government Area, Rivers State, Nigeria: A community-based study.

Gelaw, T., Ayalew, S., & Eyene, K. (2023). Knowledge and uptake of tetanus toxoid vaccine and associated factors among reproductive age group women in Hayk town South Wollo, Ethiopia: A cross-sectional study.

World Health Organization. (2019). Immunization, surveillance, assessment and monitoring.

ISSN: 2998-8179

Columbia Journal of Health Sciences and Nursing

Research Article