

Determinants of Tetanus Toxoid Vaccination Status Among Women of Reproductive Age Group Attending Basic Health Unit, Mirpur

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ABSTRACT

Objective: The objective of this study was to assess the determinants of tetanus toxoid vaccination status among women of reproductive age group and to determine association with sociodemographic variables.

Study Design: Cross sectional study

Place and Duration of Study: This study was conducted at the Department of Community Medicine, AMC / Basic Health Unit Mirpur, Abbottabad. from 1st May 2024 to 1st November 2024.

Methods: Non probability consecutive sampling technique was employed. The estimated sample size was 186. Data was handled and analyzed using SPSS version 22.

Results: The mean age of women was 31.4 ± 7.7 years. About 124(66.7%) were partially vaccinated, 13(7%) were completely vaccinated while 49(26.3%) were unvaccinated. Significant association was observed between vaccination status of women with socioeconomic status ($p < 0.001$), marital status ($p < 0.001$), educational status of women ($p = 0.03$), occupation of the women ($p < 0.001$) and profession of husbands of married ones ($p = 0.02$).

Conclusion: Most of the women belonging to reproductive age group were partially vaccinated against tetanus. Significantly associated determinants of TT vaccination status were educational status of women, socioeconomic status and employment status of both women and husbands of married women.

Key Words: Determinants, Tetanus toxoid, Vaccination

Citation of article: Iftikhar H, Nazneen Z, Farooq U, Ali S. Determinants of Tetanus Toxoid Vaccination Status Among Women of Reproductive Age Group Attending Basic Health Unit, Mirpur. Med Forum 2025;36(5):28-32. doi:10.60110/medforum.360506.

INTRODUCTION

Maternal and neonatal tetanus (MNT) is a life threatening but vaccine preventable disease. A large number of cases have been reported in regions of Asia and Africa, where delivery practices particularly cutting and care of cord are done in unhygienic conditions.¹ Once acquired, tetanus can cause 100% mortality without hospitalization with more than 50% risk of mortality with hospital care especially in developing nations.²

Tetanus is caused by contamination of wounds with spores of anaerobic bacterium clostridium tetani. They are mainly found in soil and faeces.³ WHO global statistics state that a significant cause for maternal and neonatal tetanus is lack of assistance of deliveries by trained health staff, use of unsterilized instruments, lack

of access to health care centers and few antenatal visits.⁴

Worldwide, MNT is a major problem due to low TT vaccination coverage of mothers. According to a study conducted in Nigeria in 2014, there was about 47% coverage of TT1 and 36% coverage of TT2, while administration of TT3, 4 and 5 were not documented either due to lack of awareness or lack of follow up till they got pregnant again.⁵ In Pakistan neonatal tetanus vaccination has increased from 50 % to 75% with almost 8 million children between 0 to 11 months are vaccinated under expanded program on immunization (EPI). Approximately 6.5 million women were immunized against TT by 2015 to 2016.⁴ Target year for global elimination of maternal and neonatal tetanus by WHO was year 2015 which couldn't be achieved yet. Pakistan is one of those 34 countries that have not achieved WHO target of MNT eradication.⁶ Maternal and Neonatal tetanus is considered eliminated if number of cases is reduced to less than 1 case per 1000 live births in each district.⁷

According to a study in Lahore regarding TT vaccination status, only 29(61.7%) had 2 injections of T.T during their antenatal checkups while 18 females (38.3%) never had any tetanus toxoid dose.⁸ In a study conducted in Nigeria on determinants of uptake of TT vaccine, almost two third of the patients had poor

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Received: December, 2024

Reviewed: January, 2025

Accepted: February, 2025

knowledge on TT vaccine resulting in poor uptake. It was concluded that increasing awareness can improve uptake of the vaccine by educating the target population.⁹ Results of an Ethiopian study show urban residence, marital status and residing near to health facility are major determinants of TT vaccination uptake.¹⁰

The objective of this study was to assess the determinants of tetanus toxoid vaccination status among women of reproductive age group attending BHU Mirpur. No such study has been conducted previously on this topic in a BHU, being a primary health care level facility where major chunk of nearby population goes. Moreover, tetanus still serves as a global health problem for both the mother and the neonate, assessing their vaccination status will give a clear picture of attitude of masses towards vaccination. It will enable health care workers in better educating them about the importance of this preventive measure. Moreover, instead of getting only 2 doses per pregnancy, if females complete the 5 consecutive dosage schedule, it will reduce the burden on government in meeting the needs of such a big population and further reduce the chances of hyper immunization.

METHODS

This cross sectional study was conducted in Basic Health Unit Mirpur, Abbottabad after obtaining ethical approval. The study population was married and unmarried women of reproductive age group (15 to 49 years old), visiting BHU for any ailment including antenatal/postnatal checkup, family planning services, irregular menstrual cycles, premenstrual syndrome or polycystic ovaries etc. Duration of study was six months from 1st May 2024 to 31st November 2024. Sample size (186) was calculated using open epi sample size calculator (version 3), with the following assumptions; Anticipated frequency of patients who had received at least 2 consecutive doses of tetanus toxoid vaccine 61.7%⁸, margin of error 0.07 and 95% confidence level. Non probability consecutive sampling technique was employed.

Written informed consent was taken from the patients after explaining the purpose of the study, its benefits and risks. Data on tetanus toxoid vaccination and its determinants including age, marital status, education, occupation, socioeconomic status and residence was collected as per operational definitions on a self-devised structured questionnaire by the researcher herself. TT coverage was assessed on the basis of number of doses marked in vaccination card. Confidentiality of the patient was maintained by giving number to each questionnaire rather than recording names. Data was analyzed using SPSS version 22. Quantitative variables like age of women and husband if married and family income were described in terms of mean ± standard deviation while categorical

variables including marital status, education, occupation, socioeconomic status, residence, vaccination status, consecutive TT doses taken up were described as frequencies and percentages. Association of tetanus toxoid vaccination status and its determinants like age, marital status, educational status, number of family members and monthly family income were measured by chi square test at 5% level of significance.

RESULTS

This study included a total of 186 participants with mean age of 31.4±7.7years ranging from 16- 47 years, majority 71(38.2%) being 26-35 years old. About 113(60.8%) participants were residing in rural areas while 73(39.2%) in urban areas. Among the study participants, 37(19.9%) were uneducated, 75(40.3%) were matric, 58(31.2%) were intermediate/bachelors while 16 (8.6%) were postgraduates. The mean monthly family income was PKR61,010±25,562 and most families 92(49.5%) were in low socioeconomic group. Regarding profession of women, 133(71.5%) were house wives, 36(19.4%) were professional and 17(9.1%) were students. Among the participants 107(57.5%) were pregnant, while 54(29%) were non pregnant. Out of the total, 161(86.5%) were married and 25(13.4%) were unmarried. The mean husband's age of married women was 38.1±8.7 years. Among the married women, husbands of 16(8.6%) participants were unemployed while 145(78%) were employed.

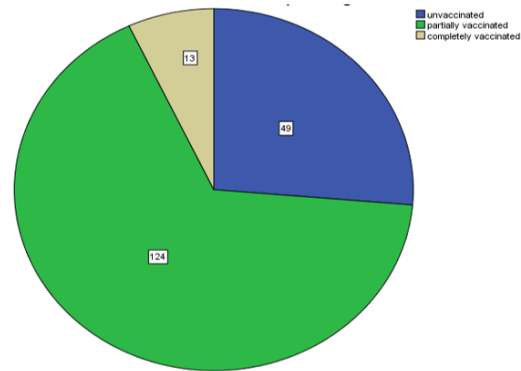


Fig No. 1: vaccination status of patients

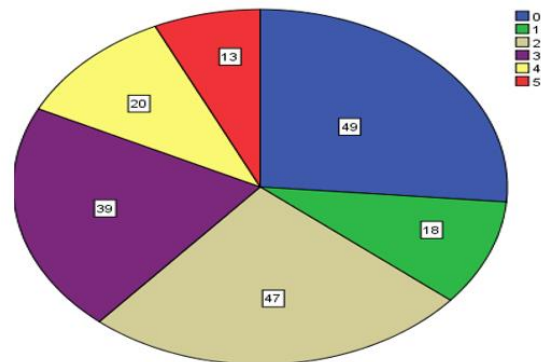


Fig. No. 2: Number of consecutive doses of tetanus toxoid taken by the patient

Regarding vaccination status, 49(26.3%) women were unvaccinated, 124(66.7%) were partially vaccinated while 13(6.9%) were completely vaccinated as shown in fig 1. The details of consecutive TT doses taken up among the partially vaccinated women are shown in fig II. It is illustrated that, 18(9.6%) received 1, 47(25.2%) received 2, 39(20.9%) received 3 and 20(10.7%) received 4 consecutive doses.

Table 1 shows the association of vaccination status with the studied determinants. Statistically significant

association was observed with socioeconomic status ($p \leq 0.001$), marital status ($p \leq 0.001$), husband's employment status of married ($p \leq 0.02$), women's profession ($p \leq 0.001$) and educational level ($p = 0.03$). Details can be seen in table 1.

No association was found between tetanus vaccination status of women with age, pregnancy status, number of children, husband's education of married and residence.

Table No. 1: Association of determinants with Tetanus Toxoid Vaccination Status.

Sociodemographic factors	un vaccinated	partially vaccinated	Completely vaccinated	P value
Socioeconomic status of women (n=186)				
Low	32(34.8%)	57(62%)	3(3.3%)	<0.001*
Middle	16(19.3%)	61(73.5%)	6(7.2%)	
High	1(9.1%)	6(54.5%)	4(36.4%)	
Marital status of women (n=186)				
Unmarried	18(69.2%)	8(30.8%)	0(0.0%)	<0.001*
Married	31(19.4%)	116(72.5%)	13(8.1%)	
Husband's occupation of married females (n=161)				
Unemployed	7(43.8%)	9(56.3%)	0(0.0%)	0.02*
Employed	24(16.6%)	108(74.5%)	13(9%)	
Occupation of all women (n=186)				
Housewife	32(24.1%)	95(74.1%)	6(4.5%)	<0.001*
Working	4(11.1%)	25(69.4%)	7(19.4%)	
Student	13(76.5%)	4(23.5%)	0(0.0%)	
Educational status of women (n=186)				
Uneducated	15(40.5%)	21(50.8%)	1(2.7%)	0.03*
Matric and below	20(26.7%)	53(70.7%)	2(2.7%)	
Intermediate and bachelors	12(20.7%)	39(67.2%)	7(12.1%)	
Masters and above	2(12.5%)	11(68.8%)	3(18.8%)	

*represents statistically significant association

DISCUSSION

This study included 186 respondents who presented to BHU Mirpur for any ailment including antenatal, postnatal, family planning visits, premenstrual syndrome, irregular cycles, polycystic ovaries etc. The objective was to assess the TT vaccination status and identify the related factors

Majority of women were housewives and a small percentage were either working or students. Mostly they had education of matric and below. This resembles the results of a study in which the number of tetanus toxoid injections and associated factors were studied among pregnant women in low- and middle-income countries.¹⁰ The educational status of the women was found to be significantly associated with tetanus toxoid vaccination coverage. Mostly women who had done bachelors were more towards getting completely vaccinated while husband's education is not associated with vaccination status of the women. This is similar to study conducted in Ethiopia in which educated women

had higher or complete vaccination and was associated with husband's educational status as well.⁹

In this study, the number of partially vaccinated women was substantial. This high number draws attention towards need for robust vaccination coverage in Mirpur union council to prevent maternal and neonatal tetanus. This is in accordance with the results of a study conducted in Lahore in which majority of women received at least TT2 with decrease in percentage of subsequent doses.¹¹

In this study, TT vaccination status when compared between married and unmarried, it was found that among the unvaccinated most of the females were unmarried. This is in line with another study in Ethiopia.¹²⁻¹⁴

A vast majority of participants belonged to rural areas where about 8 women were completely vaccinated while only 5 women from urban areas were completely vaccinated. This resembles study conducted in eastern Ethiopia where major proportion was also from rural areas.^{9,15,16}

In this study, out of all, 73.6% respondents were vaccinated against tetanus. This is in accordance to study conducted by Iqbal et al who found 79% vaccination status among pregnant women. It is also in line with the fact that in recent years, neonatal tetanus vaccination coverage has increased from about 50% to 75% in Pakistan.^{4,17-18}

This was a single center study conducted in union council Mirpur only which is limitation of this study. Hence the results are not generalizable to secondary and tertiary health care facilities.

CONCLUSION

This study concludes that most the women belonging to reproductive age group were partially vaccinated against tetanus taking up first two consecutive doses more frequently. Significantly associated determinants of TT vaccination status were educational status of women, socioeconomic status and employment status of both women and husbands of married women.

This draws attention towards taking steps in improving tetanus toxoid vaccination coverage. An important step regarding it is to improve understanding among women regarding maternal and neonatal tetanus and the devastating effects it can cause to mothers and new born and also educating the women to complete the TT vaccination once started. Health care workers, trained birth attendants and lady health workers can play a significant role so that women can become aware of risks and benefits of vaccination so that they can make decision for themselves and their families.

Recommendations: Further studies should be conducted in other primary level care facilities as well as in secondary and tertiary health care levels. Mass campaigns to create awareness of TT vaccination and completing the doses should be carried out. More factors related to the vaccination should be studied separately among married and unmarried women.

Acknowledgement: We would like to acknowledge all the staff of BHU Mirpur for their cooperation especially Dr. Shaziya Shah.

Author's Contribution:

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Conflict of Interest: The study has no conflict of interest to declare by any author.

Source of Funding: None

Ethical Approval: No.RC-EA-2024/063 Dated 28.03.2024

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