

## Original Article

# TETANUS TOXOID VACCINATION COVERAGE AND REASONS FOR NON-VACCINATION AMONG MARRIED WOMEN IN REPRODUCTIVE AGE GROUP OF 15---49 YEARS

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### **ABSTRACT:**

**Back ground & Objective:** Tetanus toxoid (TT) vaccination in pregnancy is a widely used preventive strategy targeting neonatal and periparturient tetanus. The objective of this study was to assess the coverage rate of TT vaccination among married women in reproductive age group and reasons for non-vaccination.

**Methodology:** A descriptive cross sectional study was conducted at Akhtar Saeed Trust Teaching Hospital, Lahore from February to August, 2013. A sample of forty seven (47) married women of reproductive age, fulfilling inclusion criteria was selected by non-probability, convenience sampling. Data was collected on structured questionnaire and was analyzed on SPSS version 20. Chi. Square test was applied to assess association of different factors with non -vaccination status.

**Results:** The socio-demographic profile of 47 respondents showed that 17 (36.2%) were illiterate. Large family size of more than 4 family members was showed by 42(89.4%). Results showed that 23(49%) respondents had income of less than Rs.3000/capita/month. Out of total 47respondents, 26 (55.3%) were aware of the name of disease tetanus. Knowledge about availability of vaccine for prevention of disease was present in 25(53.2%). Out of 47 participants, 21 (44.7%) women had the correct knowledge that the disease is transmitted mostly through unhygienic delivery practices. Regarding vaccination status only 29(61.7%) had 2 injections of T.T during their antenatal checkups. However, 18 females (38.3%) never had any tetanus toxoid dose. No significant difference was observed in Tetanus toxoid coverage and education of the respondent ( $p = 0.35$ ), number of antenatal visits ( $p = 0.35$ ), place of delivery ( $p = 0.82$ ) and distance to health facility ( $p = 0.12$ ).

**Conclusion:** The study reveals that tetanus toxoid coverage is very low in illiterate population.

**Key Words:** Tetanus, Vaccination, Coverage

## INTRODUCTION

Tetanus is a vaccine preventable, noncontiguous infectious disease. It is an acute disease manifested by motor and autonomic nervous system instability, caused by exotoxin produced by anaerobic bacteria *Clostridium Tetani*.<sup>1</sup>The target year for global elimination of maternal and neonatal tetanus was 2015 by World Health Organization (WHO).<sup>2</sup>

Maternal and neonatal tetanus occur mostly where deliveries and cord cutting are performed under unhygienic circumstances. High prevalence is found in the regions of Asia and Africa.

Neonatal tetanus is fatal in the absence of medical care. If mothers have been vaccinated against tetanus the infants acquire passive immunity and thus protected. Neonatal tetanus occurs through infection of the unhealed umbilical stump particularly when stump is cut with a non-sterile instrument. In 2013 alone, 49,000 newborns died due to tetanus which is about one newborn dead every 10 minutes.<sup>3</sup> WHO estimates that in 2015 almost 34,019 newborns died from neonatal tetanus. This

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alarming number can be minimized or completely abolished by 100% vaccination coverage of females of reproductive age which is a very cost effective intervention for tetanus elimination. Once the disease is contracted, the fatality rate can be as high as 100% without hospital care and between 10% to 60% with hospital care.<sup>1</sup> Thousands of lives at stake can be saved by simple administration of I/m injection of tetanus toxoid (2 injections of tetanus toxoid to antenatal mothers 4 weeks apart). Similarly 3injections for females in reproductive age group of 15 to 49 years can save them for 5 years. A study entitled “coverage of tetanus toxoid vaccination during pregnancy among women of rural areas in district Gujarat,” (Pakistan) concluded that “deployment of health workers in rural areas following a strict monitoring mechanism can significantly increase the coverage of tetanus toxoid vaccination. The increased coverage of immunization will subsequently decrease the rate of maternal and neonatal deaths”.<sup>4</sup>

Pakistan is one among high burden countries, which accounted for 45% of global neonatal tetanus deaths, which is about 22,000 deaths per year with most of the deaths remaining unreported.<sup>5</sup>

During2002, worldwide tetanus deaths recorded were around 213,000 of which neonatal tetanus was estimated to be about 180,000 and maternal tetanus about 15000 – 30,000.<sup>6</sup>World Health Organization (WHO) estimates that in 2010, 58,000 newborns died from NT.<sup>7</sup>Number of total deaths was reported 49,000 in 2013.<sup>8,9</sup>

In the United States, from 2000 to 2007 averages of 31 cases were reported per year. Nearly all of the cases in the United States occur in unimmunized individuals or individuals who have allowed their inoculations to lapse.<sup>10</sup>

In Pakistan every year, over 4 million women become pregnant, out of these 0.7 million (15%) of all pregnant women are

likely to experience obstetric and medical complications.<sup>11,12</sup>

Complete coverage of reproductive-aged women by tetanus toxoid is the most cost-effective way to eliminate this often neglected cause of maternal death.<sup>13</sup> Globally the past two decades have seen significant reduction in the number of deaths due to tetanus, however Pakistan still remains a high burden country and this problem can easily be overcome by vaccination of reproductive age mothers and newborn children.

## **METHODS**

A descriptive cross sectional study was conducted at a 300 bedded private sector, teaching hospital (ASTTH) of EME sector district, Lahore.

The study was conducted in Gynae & Obstetrics department of hospital from February, 2013 to August, 2013. The study included 47 married females of reproductive age, (15 to 49 years) in third trimester of pregnancy fulfilling the inclusion criteria through non probability, convenient sampling method. Consent was taken from the participants. The information was collected through pre-tested structured questionnaire. Response rate was 100%. Obstetric history of females regarding their current and previous pregnancies was explored. Tetanus toxoid immunizations as well as reasons for non-immunization were asked. All the data was entered and analyzed on SPSS VS 20. Fisher Exact test and Chi square test were used to find the significance of results.

## **RESULTS**

Total 47 respondents were interviewed who had experienced 132 reproductive events. The Socio demographic profiles showed 17 females (36.2%) were illiterate, 12 (25.5%) were primary pass and very small proportion was educated more than grade five. There were 10.6% women who never had children

before this pregnancy and were labeled as primigravida. There were 48.9% of women who had less than three children. Out of 47 females, 42(89.4%) were having families greater than 4 family members and 23(49%) respondents were having income of less than Rs.2500 per month. (Table 1)

**Table 1:** Socio-demographic Profile

Variables	Frequency (n)	Percent (%)
Awareness about Tetanus disease		
Yes	26	55.3
No	21	44.7
Awareness about Tetanus Neonatorum		
Yes	21	44.7
No	26	55.3
Awareness about Genetic Transmission		
Yes	22	46.8
No	25	53.2
Awareness about Transmission through unhygienic delivery practice		
Yes	21	44.7
No	26	55.3
Awareness about disease Prevention by vaccine		
Yes	25	53.2
No	22	46.8
Awareness about Presence of vaccine		
Yes	25	53.2
No	22	46.8

Out of the total 47 participants, 26 mothers (55.3%) were aware of the disease tetanus and 47.7% were aware of disease tetanus neonatorum. Twenty two participants (46.8%) shared lack of knowledge about disease transmission by responding that this disease is transmitted from mother to newborn. Out of 47, 21 (44.7%) correctly identified the mode of transmission of disease by pointing out transmission through unhygienic delivery practices. Among them 25 respondents (53.2%) had the knowledge of vaccine preventable nature of this disease and only 25 (53.2%) knew about the availability of vaccine for prevention of tetanus in Pakistan. (Table 2)

Regarding Immunization history, 29 (61.7%) of the participants were vaccinated with tetanus toxoid in the current pregnancy.

Only 18 (38.3%) had full schedule covered with five doses of TT vaccine. A Vast majority was vaccinated in private clinics followed by vaccination in Basic health unit. (Table 3)

**Table 2:** Knowledge about disease & availability of vaccine

Variables	Frequency (n)	Percent (%)
Educational Status		
Illiterate	17	36.2
Primary	12	25.5
Matric	6	12.8
Graduation	7	14.9
Post grad	5	10.5
Number of Children		
No Children	5	10.6
<3	23	48.9
>3	19	40.4
Total Family Member		
<4	5	10.6
>4	42	89.4
Total monthly Income		
<2500	23	48.9
2500 – 5000	16	34
>5000	8	17

**Table 3:** Immunization Status

Variables	Frequency (n)	Percent (%)
Immunized against tetanus toxoid		
Yes	29	61.7
No	18	38.3
Completed course of 5 injection		
Yes	18	38.3
No	29	61.7
If yes from where		
BHU	11	23.4
RHC	1	2.1
District Hospital	8	17
Private Clinic	27	57.4

These 47 women have experienced 132 pregnancies in total. In these 132 pregnancies, 34.1% never had a single antenatal visit. There were 26.5% who had less than 3 antenatal visits during their

course of delivery. There were 54 deliveries (40.9%) conducted at home. Tetanus toxoid vaccine coverage in these pregnancies was reported to be 67.4% only and majority of them got this vaccination in last trimester. (Table 4)

**Table 4:** Factors affecting vaccination status

Factors affecting vaccination		Frequency	Percentage %
Antenatal Visits	No Visit	45	34.1%
	<3	35	26.5 %
	>3	52	39.4 %
Home Delivery	Yes	54	40.9 %
	No	78	59.1 %
T.T. Vaccination	Yes	89	67.4 %
	No	43	32.6 %
At Which Trimester	No response	48	36.4 %
	Second Trimester	2	1.5 %
	Third Trimester	82	62.1 %

Reasons for poor coverage were assessed in these 132 experiences and the results showed that 99 times (75%) women were not aware of this vaccine. Fear of abortion and fear of side effects was not mentioned by any of the respondent. Only 2.3% of the respondents pointed out distant facility as a barrier for vaccination. (Table 5)

**Table 5:** Reasons for poor coverage with Tetanus Toxoid vaccination

Variables		TT vaccine		P-value
		Yes	No	
Education of respondent	Yes	20	10	0.35
	No	9	8	
> 3 Ante Natal visits	Yes	44	8	0.38
	No	27	8	
Home Delivery	Yes	37	52	0.82
	No	17	26	
Distant facility	Yes	0	3	0.12
	No	89	40	

To find out the relationship of vaccination status with Tetanus toxoid and other socio-demographic profiles, chi square test of significance was applied. It was observed that Tetanus toxoid coverage and education of the respondent showed that literates are 1.26 times more in vaccination practices than illiterate ( $p=0.35$ ). Similarly women who have experienced more than 3 antenatal visits they have 1.10 times more vaccination coverage practice ( $p = 0.35$ ) and (R.R. = 1.10). However there is no significant difference between home delivery and vaccination practice. ( $p = 0.82$ ) and (R.R. = 1.0). Far away health facility or distance has no impact on vaccination practices ( $p = 0.12$ ) (Table 6)

**Table 6:** Factors affecting vaccination status

Reasons		Frequency (n)	Percentage (%)
Aware of vaccination	Yes	33	25 %
	No	99	75 %
Fear of Abortion	Yes	-	-
	No	132	100 %
Fear of Side Effect	Yes	-	-
	No	132	100 %
Distant Facility	Yes	3	2.3 %
	No	129	97.7 %
Non Availability	Yes	-	-
	No	132	100 %
No Permission	Yes	-	-
	No	132	100 %
Non Affordable	Yes	-	-
	No	132	100 %

## DISCUSSION

Maternal and neonatal tetanus is a silent killer. The target year for global elimination of Maternal & Neonatal Tetanus (MNT) was 2015. Pakistan is one of the five countries accounting for 90 % global neonatal tetanus deaths.<sup>3</sup>

This study in Akhtar Saeed Trust Teaching Hospital was conducted to assess the vaccination coverage and reasons for non-vaccination in spite of free availability of

vaccine in public sector health facilities. In total 47 respondents who had experienced 132 reproductive events vaccination awareness was 25% only. In this scientific era of advanced technology, unawareness in 75% of antenatal mothers was very alarming. Only 2.3% stated that far away health facility was the reasons of non-vaccination rest was unaware of vaccination. In this study 49% of respondents were living below the poverty line and increasing burden of poverty leads to improper medical care seeking behavior and less vaccination coverage. In a similar study published in Ayub Medical College journal in March 2010, "out of total 304 females of reproductive age 38.4% were unaware about tetanus vaccination".<sup>6</sup> similarly an urban study of Jinnah Hospital, Lahore showed, "out of random sample of 362 reproductive age females, who had delivered, during the previous 3 months, 87% remembered they had 2 doses of TT injections. The main reasons for low coverage were lack of awareness about the importance of vaccination and misconception about it that it was the contraceptive."<sup>10</sup>In another study carried out to find the vaccination coverage of mothers during pregnancy with tetanus toxoid and infants after birth, it was concluded that the socio economic conditions and educational level of parents is significantly associated to mothers vaccination coverage which is contrary to the results found in this study.<sup>1</sup>In a study of 8,474 births in rural north India, 258 resulted in neonatal deaths. This study concludes that newborn survival could be achieved through increased coverage of antenatal T.T vaccination.<sup>13</sup> There is a constant need for creating awareness and motivation among females about significance of T.T vaccination as in a study the % of receiving two doses of vaccination in Pakistan was 56% in 2002. 57% in 2003 and 45% in 2004.<sup>14</sup>Maternal & neonatal tetanus killed 34,000 new borne in 2015 alone .<sup>15</sup>In a study

the data demonstrate that a limited-dose regimen of maternal tetanus toxoid (one injection) provides significant and extended protection against the risk of neonatal tetanus death.<sup>22,23</sup>

## CONCLUSION

All the relevant literature and this study revealed underutilization of vaccination services with tetanus toxoid in pregnant women. Lack of knowledge was the main significant factor in non-immunization practices.

## RECOMMENDATIONS

The motivated antenatal mothers for tetanus toxoid vaccination as well as reproductive age females (15-49 yrs.) for tetanus vaccination is a goal yet to be achieved. It is strongly recommended to create awareness among women of reproductive age group and particularly pregnant women to have Tetanus toxoid vaccine to prevent maternal and neonatal tetanus both.

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