Original Research Article

Tetanus Toxoid immunization Coverage in Federal Medical Centre, Umuahia, Abia State, South East Zone, Nigeria

Abstract

Background: Tetanus toxoid immunization is given to pregnant women and women of child bearing age to prevent neonatal tetanus and maternal tetanus. The tetanus toxoid is given five times to women of child bearing age. If the vaccination is given rightly and completely the woman will be protected for 35 years or even for life. It was therefore necessary to find out the tetanus toxoid coverage in such tertiary health institution where many pregnant women attend and immunization is given.

Objective: To determine the tetanus toxoid coverage in the health facility.

Methods: Records of the data management tools of TT immunization were checked and data collected. The data was collected from tetanus toxoid register in the immunization unit of Federal medical centre, Umuahia, retrospectively. Data was analyzed with Excel and Epi info.

Results: The health facility summary form showed steady increase in coverage rate for TT1 and TT2 pregnant women only from 2006(33%, 28%) to 2012(64%, 50%) except 2010(37%, 29%) where it reduced. The drop-out rate of TT1/TT2 ranged from 14% in 2011 to 28% in 2009. In immunization register 2006-2009 those that completed ranged from 10%-16% out of the number that started.

Conclusion: The coverage rate of TT was low with highest coverage rate in 2012 and there was also high dropout rate. This showed that many pregnant women are still not immunized with TT and some that started did not get the second dose indicating no protection.

Key words: Tetanus toxoid, immunization, Coverage
Introduction

Tetanus is a preventable infectious disease caused by a Gram positive rod like spore forming obligate anaerobic bacterium, Clostridium tetani that produce an exotoxin resulting in the clinical manifestations of tetanus. It is one of the diseases marked for elimination and the persistence of clinical cases in any community is a direct indictment of the health authorities of the country in question, reasons being the simplicity of tetanus toxoid administration, its safety, effectiveness and cheapness.[1]

Maternal tetanus is defined as tetanus occurring during pregnancy or within 6 weeks after any type of pregnancy termination, it is one of the most easily preventable causes of maternal mortality. It includes postpartum or puerperal tetanus resulting from septic procedures during delivery, postabortal tetanus resulting from septic abortion and tetanus incidental to pregnancy, resulting from any type of wound during pregnancy [2]; while neonatal tetanus is tetanus occurring in a newborn between the 3rd and 28th day after birth.[2]

Predisposing factors to Maternal and Neonatal Tetanus (MNT) include limited access to health services, poor hygienic conditions, lack of access to sterilized childbirth delivery tools and unhygienic practices during childbirth. Contact between the bacteria and broken skin or dead tissues, such as the wound resulting when an infant's umbilical cord is cut brings about transmission. Of the 28 countries with high number of tetanus cases, 16 including Nigeria accounting for 90% of global neonatal tetanus cases are in the African region and estimations are that with no cure MNT is responsible for an average 110,000 deaths a year in the African Region of the World[3]

In 1988, WHO estimated around 787,000 newborns deaths due to neonatal tetanus. Despite few success stories majority of the Low and Middle Income Countries (LMICs) are still struggling to reduce neonatal mortality due to neonatal tetanus [4].

Key measures in the prevention of maternal and neonatal tetanus deaths hinge on hygienic delivery and cord care practices, and/or by immunizing mothers with tetanus vaccine. The eradication of tetanus i.e. the complete extermination of the bacteria is rather impossible unlike for polio and small pox because the spores of clostridium tetani are ubiquitous in the environment but MNT Elimination Initiative aims to reduce the number of maternal and neonatal tetanus cases to such low levels that MNT is no longer a major public health problem through immunization of pregnant and child bearing age women (CBAW) and promotion of more hygienic deliveries. MNT Elimination is defined as less than one case of neonatal tetanus per 1000 live births in every Local Government Area.[5]

Current immunization guidelines require administration of 5 doses of TT to women in their reproductive to prevent MNT

Tetanus Toxoid schedule for women of child bearing age [WCBA].[6]
Prior to the 42nd World Health Assembly in 1989 call for elimination of neonatal tetanus by 1995, WHO estimated the death 787,000 newborns in 1988 and the annual global NT mortality was approximately 6.7 NT deaths per 1000 live births. World health Summit in 1990 listed neonatal tetanus among its goals while the 44th WHA re-endorsed the goal in 1991. The implementation of the strategies for NT Elimination made only slow progress for which the target date was postponed to 2000. The initiative was reconstituted by adding maternal tetanus elimination when the goal was not achieved in 2000 and the target date shifted to 2005. By 2010 there has been a 93% reduction from the 1980s situation with 58000 newborns dying from NT while by November 2012, 31 countries had not achieved elimination status.[3]

Neonatal tetanus is still reported in this hospital. Two cases were reported in the first quarter of the year 2013 (source neonatal records FMC, Umuahia). Abia state tetanus toxoid coverage was low TT1( 27%), TT+( 34%) in 2007, TT1( 38%), TT+( 41%) in 2008 (source state report) and tetanus toxoid campaign was carried out in 2009.

It was therefore necessary to find out the extent of uptake of tetanus toxoid in such tertiary health institution where many pregnant women attend and immunization is given.
Objective: To determine the coverage rate of tetanus toxoid immunization

Methodology: Records of the TT data management tools (TT immunization Register, Tally sheet and Health Facility Summary form) were checked and data collected retrospectively. The women immunized with TT were grouped into two; pregnant and non pregnant. Data collected were from 2006 to 2012 and analyzed with Excel and Epi info. Univariate analysis was carried out.

Federal Medical Centre is the only Federal tertiary health facility in the State. It is situated in Umuahia the capital of Abia state, South East Zone of Nigeria.

The immunization unit of Federal Medical Centre is under the department of Community Medicine. The hospital provided the infrastructure while the Federal Government through the State Ministry of Health and Local Government provide the vaccine, needle and syringes for immunization. Some Agencies, the Hospital and the Federal Government also provided the cold chain system like refrigerators, freezer, cold boxes, vaccine carriers and ice pack.

In the Facility immunization is given routinely as follows DPT, HBV, OPV and TT Monday to Friday, Measles and Yellow fever only on Tuesday, BCG is given only on Wednesday. Coverage rate is defined as number of pregnant women and women of child bearing age given TT divided by target population multiplied by 100. Dropout rate for TT1 and TT2 was measured as number of pregnant or women of child bearing age that received TT1 minus TT2 divided by TT1 multiplied by 100

Result: The Health facility summary form showed steady increase in coverage rate for TT1 and TT2 for pregnant women only from 2006(33%, 28%) to 2012(64%, 50%) except 2010(37%, 29%) where it reduced.

The drop- out rate of TT1/TT2 ranges from 14% in 2011 to 28% in 2009. In Immunization register 2006-2009 those that completed ranges from 10%-16% out of the number that started.
The figure showed the uptake of Tetanus toxoid from 2006 to 2012 of pregnant and non-pregnant. The number decreased with subsequent TT given. The TT1 was highest and TT5 lowest in both pregnant and non-pregnant.

The figure 2 showed the number of pregnant women immunized with TT1 and TT2. In 2009 many of the pregnant women (28%) received TT1 without receiving TT2. The drop
The figure 3 showed the monitoring chart of DPT and TT for 2011, the coverage of TT1 and TT2 were 50% and 43% respectively while DPT 1 was 96% and DPT 67%.
The TT Taken by the pregnant mothers from summary form and register were compared. The in the summary form were higher from 2006-2007 but lower from 2008-2012. This is not statistically significant. P. Value 0.23
Figure 5 compared the TT1 in non pregnant women from summary form and register. The number immunized in the summary form was very high compared to what was recorded in the register.

**Discussion:** The TT1 coverage was low and reduced further with subsequent immunization this may be due to many women after the TT1 and TT2 during pregnancy they may not continue with the antigen up to TT5.and this may also be due to lack of awareness creation of the importance of TT immunization in prevention of tetanus in mothers and children. This is similar to study done in Dhaka City, Bangladesh were although 85% of women with children less than 1 year received two doses of TT only 11% of woman of child bearing age received five doses of TT[7]

The low coverage rate as seen in this study was similar to another study done. [8] While some studies done showed much lower coverage[9] However some studies showed higher coverage rate[7,10] Some were able to improve the TT coverage with supplemental immunization activities (SIA) were through the implementation of SIAs 80% of women received 2 or more doses of TT[11]

There was also high drop out rate for TT given to mothers and this indicates poor utilization of the health facility and no protection since the TT1 does not confer any protection. It also showed the likelihood of having neonatal tetanus since studies have shown that TT immunization is one of the ways to prevent neonatal tetanus [12,13] The high dropout rate recorded in this study is similar to the study done in East Nile Province in Sudan where 15% drop out rate was recorded.[14]

The comparison of monitoring chart of TT and DPT showed higher coverage of DPT than TT, this was similar to another study.[15] It could be that many women give preference to their children’s immunization. It could also be the awareness of the importance of TT immunization has not been created and the women may not know why the immunization is given. It may be that the Government is not paying much attention to TT as it does to routine immunization of children since routine immunization in children will be addressing so many diseases and the relationship between the occurrence of the disease in children and the immunization in the mother may not be understood. There was high drop out in both TT and DPT this showed poor utilization in the health facility.

There was higher coverage of TT1 in non pregnant,(women of child bearing age WCBA 15-49) than pregnant women, which is in contrast with some studies 7, 10. This led to the data quality self assessment. The data for TT for pregnant women from different data management tools were compared (TT summary form and the register). The difference was not statistically significant but when that of non pregnant women were compared, the difference was statistically significant.
This showed the pregnant women record was better than non pregnant record. It may also show that all the people recorded in the summary form were not only women; it could be that the people who had injury and came for TT were recorded to account for the vaccine given. The people will be tallied and put in summary sheet but could not register them in the TT immunization register were, they are suppose to be only female. It therefore means that the data could not be accrued to WCBA.

**Conclusion and Recommendations:** The coverage rate of TT was low with improvement in 2012 and also high dropout rate. This showed that many pregnant women are still not immunized with TT and some that started did not get the second dose indicating no protection.

There should be emphases on adult immunization which seems to have been neglected especially TT to be able to achieve MDG goals 4 and 6 and TT elimination of <1per 1000live births

Separate data management tools (tally, summary form and register) should be provided for those especially male and female not within the age of women of child bearing age that came for immunization due to other reasons like injury.

Study should be done to find out the reasons for low coverage.

**Competing Interest:** The authors declare no competing interest.

**References**


