

**Original Research Article**

**PERCEPTION OF TETANUS TOXOID IMMUNIZATION  
AMONG WOMEN IN A NIGER DELTA COMMUNITY,  
NIGERIA**

**ABSTRACT**

**Aims:** To assess the awareness and knowledge of tetanus toxoid (TT) immunization among women in Alakahia, a community in Obio/Akpor LGA, Rivers State in the Niger Delta region of Nigeria.

**Study design:** This cross-sectional descriptive study

**Place and Duration of Study:** This study was carried out in August 2016 among 276 pregnant women and women who had given birth in the last one year in Alakahia community, Rivers State.

**Methodology:** A cluster sampling method was used and respondents were recruited and interviewed with a pretested interviewer-administered questionnaire divided in two sections. Section A was on awareness about TT immunization structured from the WHO cluster form for TT immunization and section B was on knowledge of TT immunization. Descriptive statistical analysis was done using the Statistical Package for social Sciences (SPSS) version 20.

**Results:** The study showed a high level of awareness about TT immunization (73%); however there was poor knowledge about TT immunization (78.6%) and its schedule.

**Conclusion:** Women in Alakahia community lack adequate knowledge about TT immunization and its proper schedule. There is need for increased education at the community level on TT immunization even from adolescence. Adequate knowledge will improve TT immunization coverage which will make maternal and neonatal tetanus elimination achievable.

**Keywords:** neonatal tetanus, tetanus toxoid, Immunization.

**1. INTRODUCTION**

Adequate awareness and knowledge about NNT and TT immunization, and community participation via hygienic delivery practices among women of childbearing age has ultimately contributed to the elimination of MNT in several parts of the world [1]; thus tetanus infection can totally be prevented.

Despite remarkable achievements towards elimination and prevention of MNT, Nigeria still remains among the 19 countries yet to achieve the World Health Organization's (WHO) 2015 NNT elimination goal [1]. The incidence of tetanus infection in Nigeria is up to 20 per 1000 and this is higher than the incidence found in other African countries. Nigeria contributes about 90% of the global burden of the infection and this is of great concern [1]. It is of more concern to know that in Rivers State, from 1995 till date, 114 cases of post neonatal tetanus, and 313 cases of NNT have been reported [2].

Although tetanus infection can affect any age group, health professionals are more concerned about women of the reproductive age (WRA) group because these women in addition to protecting themselves also protect their unborn babies from the fatal course of the disease in the neonatal period. This double protection is majorly brought about by adequate TT immunization coverage as neonates are protected by the transfer of antibodies against tetanus infection from an adequately immunized mother [1].

Five doses of TT immunization has been recommended by WHO for WRA group to protect against NNT and to proffer life-long immunity to these women and the level of protection against tetanus is increased at each subsequent dose [3]. However studies in this part of the world however have

shown that most women do not have adequate knowledge about TT immunization and this has hampered the achievement of elimination [4-6].

This paper therefore investigated the awareness and knowledge of TT immunization among women in Alakahia, a community in the Niger Delta region of Nigeria.

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## 2. MATERIAL AND METHODS / EXPERIMENTAL DETAILS / METHODOLOGY

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### 2.1 Study Area

This study was carried out in a semi urban community located at Alakahia in Obio/Akpor Local Government Area in Rivers State, in the Niger Delta Area of Nigeria. Alakahia shares boundary with Rumuekini community to the north, Choba community to the south, Rumualogu community to the east and Aluu community to the west. The University of Port Harcourt Teaching Hospital (UPTH) is located within the community where several cases of post neonatal and NNT have been reported [2]. Members of the community are of the Ikwerre tribe. There are four major families in the community which are Rumudike, Rumuodimaya, Rumulugbo, and Rumuosogwu. They live amongst themselves. The community is laid out in orderly streets and clearly delineated compounds in some areas and there are four main streets namely: NYSC, Alogu, Mgbuike and Rumualogu. Household listing obtained from the National Population Commission, showed that there are about 670 households [7]. Women are mostly house wives and petty traders, and few of them are civil servants. Pregnant women go for antenatal visits at UPTH, Aluu health centre and private clinics.

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### 2.2 Study population

Study population included women who had given birth in the last one year and all pregnant women in Alakahia community irrespective of their gestational age. They were mainly house wives and traders.

### 2.3 Study Design and Sampling

This study was a cross-sectional descriptive study and participants were recruited using a cluster sampling method. A prevalence rate of 10.1% [5] and a cluster design effect was used. Margin of sampling error tolerated was set at 5% at 95% confidence.

### 2.4 Sampling Method

A cluster sampling method was used. Data was collected using an interviewer-administered questionnaire structured from the WHO cluster form for TT immunization [8]. The study area was grouped into four clusters using the four main streets as a frame, and numbers 1 to 4 were assigned to each cluster. The clusters from where participants were recruited was randomly selected by balloting and the household to start recruiting participants from was randomly selected by locating the geographical centre of each cluster, which was the market square; and a bottle was spun and the direction where the mouth of the bottle faced where it stopped spinning was chosen as a start off point. All the houses from that direction were sampled and these women recruited consecutively until the sample size was met. Ten to fifteen respondents were recruited every day.

### 2.5 Data Collection

The study was carried out over 4 weeks in August 2016. Two research assistants were trained by the researcher on how to administer the questionnaires. Respondent's homes were visited mostly in the evenings when members of the house-holds and respondents would be at home.

Data was collected using a pretested interviewer-administered questionnaire; section A was on awareness of tetanus and TT immunization structured from the WHO cluster form for TT immunization [8], section B was on knowledge about TT immunization.

## 2.6 Data Analysis

Data was analysed using the Statistical Package for Social Scientists (SPSS) version 20. Socio-demographic and other variables were presented as frequency tables. A rating scale was derived from the multi-choice questions which were used to assess knowledge. Participants that scored 6-10 were rated good and those scored 5-1 were rated poor.

## 3. RESULTS AND DISCUSSION

### 3.1 Socio-demographic characteristics of respondents

Majority of the women (75%) were between 31 to 40years; 61 (22.1%) were aged 21 to 30 years old and 50 of the women (8%) were above 40years old with a mean age of  $36.36 \pm 4.38$ . Two hundred and seventy-three women (98.9%) were married while only 3 women (1.1%) were single. Most of the women had three children (29.3%), 65 of them (23.6%) had four children while 50 of the women (18.1%) had more than four children. One hundred and thirty-nine of the women (50.4%) had secondary level of education, 68 of them (24.6%) had tertiary level of education while 69 (25%) had primary level of education. Majority of their husbands (57.6%) had completed secondary education, 58 (21%) had primary education, 40 (18.5%) had tertiary education while 19 (6.9%) had no formal education.

Majority of the women were house wives (39.5%), while those that had a source of income were mainly traders (33.7%) and artisans (26.4%) and majority of their husbands were artisans (36.6%) (Table1).

**Table 1**

**Socio-demographic characteristics of Women in Alakahia community**

| Socio-demographic variables        | Frequency (276)  | Per cent |
|------------------------------------|------------------|----------|
| <b>Age</b>                         |                  |          |
| 21-30 years                        | 61               | 22.1     |
| 31-40 years                        | 207              | 75.0     |
| 41-50 years                        | 8                | 2.9      |
| Mean $\pm$ SD (years)              | $36.36 \pm 4.38$ |          |
| <b>Marital Status</b>              |                  |          |
| Single                             | 3                | 1.1      |
| Married                            | 273              | 98.9     |
| <b>Parity</b>                      |                  |          |
| One                                | 29               | 10.5     |
| Two                                | 51               | 18.5     |
| Three                              | 81               | 29.3     |
| Four                               | 65               | 23.6     |
| More than four                     | 50               | 18.1     |
| <b>Religion</b>                    |                  |          |
| Christianity                       | 274              | 99.3     |
| Muslim                             | 2                | 0.7      |
| <b>State of Origin</b>             |                  |          |
| Abia                               | 19               | 6.9      |
| Akwa Ibom                          | 54               | 19.6     |
| Anambra                            | 27               | 9.8      |
| Benue                              | 4                | 1.4      |
| Delta                              | 37               | 13.4     |
| Enugu                              | 24               | 8.7      |
| Imo                                | 32               | 11.6     |
| Osun                               | 3                | 1.1      |
| Rivers                             | 76               | 27.5     |
| <b>Mother's Level of Education</b> |                  |          |
| Primary                            | 69               | 25.0     |
| Secondary                          | 139              | 50.4     |

|                                     |     |      |
|-------------------------------------|-----|------|
| Tertiary                            | 68  | 24.6 |
| <b>Mother's Occupation</b>          |     |      |
| House wife                          | 109 | 39.5 |
| Trader                              | 93  | 33.7 |
| Artisan                             | 73  | 26.4 |
| Civil servant                       | 1   | 0.4  |
| <b>Husband's Level of Education</b> |     |      |
| No formal education                 | 19  | 6.9  |
| Primary                             | 58  | 21.0 |
| Secondary                           | 159 | 57.6 |
| Tertiary                            | 40  | 14.5 |
| <b>Husband's occupation</b>         |     |      |
| Business man                        | 65  | 23.6 |
| Trader                              | 81  | 29.3 |
| Artisan                             | 101 | 36.6 |
| Civil servant                       | 8   | 2.9  |
| Banker                              | 11  | 4.0  |
| Taxi driver                         | 8   | 2.9  |
| Others                              | 2   | 0.7  |

### 3.2 Respondents' awareness of tetanus and TT immunization

All the women (100%) had heard about neonatal tetanus (NNT) and their source of information was from a health centre. One hundred and thirty-nine of the women (50.5%) were aware that mothers could also get infected with tetanus and 137 (49.5%) were not. Out of the 276 women, two hundred and one (73%) of them were aware that poor TT immunization will result in NNT (see Fig 1). In addition all the women were aware that delivery in unhygienic places (100%) and poor cord care (100%) could also lead to NNT (Table 2).

**Table 2**

#### Respondents' awareness about neonatal tetanus and tetanus toxoid immunization

| Awareness about NNT and TT immunization            | Frequency | Per cent |
|----------------------------------------------------|-----------|----------|
|                                                    | (n = 276) |          |
| <b>Ever heard about neonatal tetanus infection</b> |           |          |
| Yes                                                | 276       | 100      |
| No                                                 | 0         | 0        |
| <b>Source of information about NNT infection</b>   |           |          |
| Health worker                                      | 276       | 100.0    |
| <b>Mother can get infected with tetanus</b>        |           |          |
| Yes                                                | 139       | 50.5     |
| No                                                 | 0         | 0.0      |
| I don't know                                       | 137       | 49.5     |
| <b>NNT can be prevented by immunization</b>        |           |          |
| Yes                                                | 201       | 72.8     |
| No                                                 | 0         | 0.0      |

|              |    |      |
|--------------|----|------|
| I don't know | 75 | 27.2 |
|--------------|----|------|

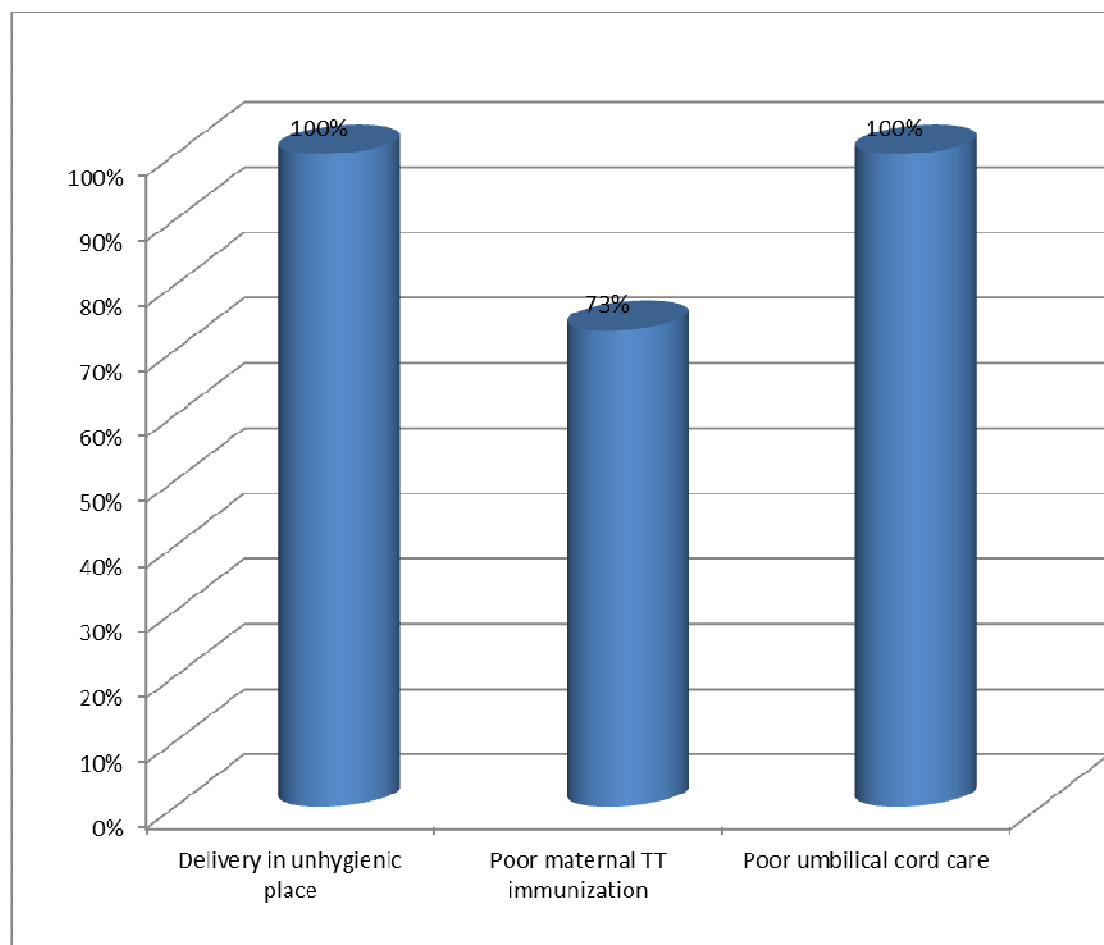


**Figure 1**

**Respondents awareness of possible causes of NNT infection (n=276)**

### 3.3 Respondents' knowledge of TT immunization

The knowledge of TT immunization was rated using a scale: women that scored 1-5 were rated "poor", while those that scored 6-10 were rated "good" (table 3).

Out of the 201 (73%) women who were aware of TT immunization, 158 (78.6%) had poor knowledge about TT immunization while 43 (21.4%) had good knowledge.

**Table 3**

**Level of knowledge about TT immunization**

| Level of knowledge                |                    |              |
|-----------------------------------|--------------------|--------------|
| (number of answers assessed = 10) | Frequency (n =201) | Per cent (%) |
| Good                              | 43                 | 21.4         |
| Poor                              | 158                | 78.6         |

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144 Poor level of knowledge about TT immunization was majorly in the area of TT immunization schedule  
145 (See table 4).

146 Majority of the women (27.9%) agreed that a woman requires three doses of TT vaccination to protect  
147 her baby from NNT, 27 women (9.8%) agreed that a dose is required which is higher than the 19  
148 women (6.9%) who agreed that two doses of TT vaccination protects against NNT. Eighty-eight  
149 women (31.9%) agreed that three doses of TT immunization provide long-lasting protection for a  
150 woman while 7 women (2.5%) agree that two doses proffer long-lasting protection; 18.5% of the  
151 women don't know the number of doses needed for long-lasting protection for a woman.

#### 152 **Table 4**

#### 153 **Level of knowledge about TT immunization schedule**

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| TT immunization doses                                                      | Frequency (n =276) | Per cent |
|----------------------------------------------------------------------------|--------------------|----------|
| <b>Number of doses of TT a woman requires to protect her baby from NNT</b> |                    |          |
| One dose                                                                   | 27                 | 9.8      |
| Two doses                                                                  | 19                 | 6.9      |
| Three doses                                                                | 77                 | 27.9     |
| Four doses                                                                 | 11                 | 4        |
| Five doses                                                                 | 0                  | 0.0      |
| I don't know                                                               | 12                 | 4.3      |
| <b>Number of doses that provides long-lasting protection for a woman</b>   |                    |          |
| One dose                                                                   | 0                  | 0.0      |
| Two doses                                                                  | 7                  | 2.5      |
| Three doses                                                                | 88                 | 31.9     |
| Four doses                                                                 | 0                  | 0.0      |
| Five doses                                                                 | 0                  | 0.0      |

|              |    |      |
|--------------|----|------|
| I don't know | 51 | 18.5 |
|--------------|----|------|

This study showed that all the women were aware of NNT, and 73% of the women were aware that TT immunization is required to prevent NNT. This level of awareness can serve as a strong foundation to take a step further in educating these women on the proper TT schedule and motivating them to participate in MNT elimination. This high level of awareness about TT immunization was similarly reported by Sule et al [4] and a much higher level of awareness of 94.7% was reported by Alex Hart and Okoh [5]. This could be attributed to the fact that their study was carried out in a tertiary institution as compared to this study in a semi urban community.

Despite the high level of awareness, there was inadequate and poor knowledge about TT immunization, more so TT immunization schedule. With regards to TT immunization schedule: this study reported 27.9% of women who agree that at least 3 doses of TT immunization are required to protect from NNT infection, 6.9% and 9.8% admitted that 2 doses and a dose are required to prevent NNT respectively; also 31.9% and 2.5% agree that three and two doses of TT immunization are required for long life immunity for women. None of them knew that up to 4 doses could be given and that 5 doses are required to give long life immunity. This may have contributed to the persistence of maternal tetanus in this part of the world. This low level knowledge on proper TT immunization schedule was also reported by Alex Hart and Okoh [5]. However, 18.2% of participants in the study by Alex Hart and Okoh knew that 5 doses of TT immunization proffers long lasting immunity in contrast to 0.0% in this study, this can probably be attributed to differences in the level of education. Similarly, Sule et al [4] reported low level of knowledge on the proper TT immunization schedule required in pregnancy to prevent NNT (14.4%) and for life protection (19.5%). Alex & Okoh and Sule et al however did not rate the knowledge of TT immunization in their studies [4, 5].

## 4. CONCLUSION

There is a high level of awareness of NNT and TT immunization among women in Alakahia however they lack knowledge of TT immunization and its proper schedule.

## ETHICAL APPROVAL

Ethical clearance was obtained from the Research and Ethics Committee of University of Port Harcourt before commencement of the study. Permission was obtained from the village chiefs, village heads and husbands of these women. Informed consent was gotten from the women and the reason for the study was explained to them in the local language that they understood.

All information collected was securely kept in the official database, and data access was restricted to authorized persons.

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