

## **AWARENESS AND COMPLIANCE OF ANTITETANUS IMMUNIZATION AMONG ADULT FEMALES IN A TERTIARY INSTITUTION IN NIGERIA**

**<sup>1</sup>Bamidele, J. O., <sup>2</sup>Umoh, S. H.**

**<sup>1</sup>Department of Community Medicine, College of Health Sciences  
LAUTECH, Osogbo, Nigeria**

**<sup>2</sup>Department of Guidance & Counseling, Faculty of Education  
University of Ilorin, Ilorin, Nigeria.**

**Correspondence to: Dr. J. O. Bamidele**

The purpose of this study was to investigate the awareness level and the compliance to anti-tetanus immunization among adult females in an urban community in South West of Nigeria. The rationale for the study was informed by the fact that high incidence of tetanus infections and deaths are still being reported from our clinics regularly. A total of 394 female workers and students of LAUTECH University and its Teaching Hospital participated in the cross-sectional survey. They were selected using the stratified sampling procedure. A pre-tested structure but open-ended questionnaire was administered on the respondents. The result of the analysis showed a high level of awareness (69.8%) of anti-tetanus immunization among the respondents and a high significance association was found between the level of awareness and respondent's profession ( $X^2 = 7.65$ ;  $p < 0.0011$ ). Majority of the respondents (56.1%) took their last dose of anti-tetanus immunization during their last pregnancies. More than one third (37.2%) of the 148 respondents who ever gave birth took only one dose or none during their last pregnancy, thus putting into question the immunological status of those mothers and the children they gave birth to then. It was concluded that despite the high level of awareness among the respondents, compliance was quite low. It is recommended that government should provide logistic supports to make immunization programme accessible on a sustainable basis to everybody in the country. Activities should be put in place that will promote behavioural change in women so that they can go for anti-tetanus immunization.

**Keywords: Antitetanus immunization, adult females; awareness; Compliance.**

### **INTRODUCTION**

Tetanus is a serious disease with high mortality rate. Globally, the disease kills more than 450,000 infants each year and nearly 40,000 mothers die from tetanus infection acquired during delivery (1, 2). Maternal tetanus is caused by contamination from tetanus spores through puncture wounds and is linked with abortions and deliveries that are unsafe or unclean. Symptoms are similar to those of neonatal tetanus, including tight jaw, stiff neck and body muscles, difficult swallowing and spasms. Cases occur between 2 and 21 days after the injury; most occur within 14 days (3). Tetanus is very difficult to treat but can be prevented easily by vaccination especially if adequate number of

doses are given to confer the required level of immunity.

Several studies have demonstrated that a large percentage of people are inadequately immunized against tetanus (4). A study carried out in Turkey to quantify anti-toxoid IgG antibody in blood sera in different age groups revealed a decline of tetanus IgG antibody with age (5). Another study that was undertaken to determine the serological response in children aged 1-15 years immunized with diphtheria-pertussis-tetanus vaccine (DPT) alone or with tetanus toxoid (TT) booster dose under the Expanded Programme on Immunization (EPI) in Dar es Salaam and Bagamoyo, Tanzania concluded that the current DPT immunization schedule provides adequate tetanus immunity

for children under 5, but however, about half of the older children had no protection against tetanus (6). A community-based study in Rivers state of Nigeria to determine the status of tetanus toxoid immunization in parturient women revealed that among the women surveyed, only 41.2% had complete (two doses of tetanus toxoid) immunization, while 58.8% had partial or no coverage status (7). In 1996, the Advisory Committee on Immunization practices (ACIP), and the American Academy of Family Physicians (AAFP), and the American Medical Association recommended a well-child office visit at age 11 to 12 years to check vaccination status. They recommended that vaccination status should be assessed for vaccine preventable diseases including diphtheria-tetanus (DT) toxoid not given in the past years (8).

A total of 2,945 cases of tetanus and 1,871 cases of neonatal tetanus were reported in Nigeria by the World Health Organization (WHO) in 1996 and 1998 respectively (9). The TT2 Coverage in Nigeria in 1998 was 29% (9). Tetanus infections and deaths from the disease are still being reported in our clinics regularly. The rising incidence of emerging and reemerging infectious diseases also remain a matter of great concern (10). In line with the above, this study was therefore carried out to assess the level of awareness and compliance of anti-tetanus immunization among a cross-section of adult females in South West of Nigeria.

#### **MATERIALS AND METHODS**

The subjects for this cross-sectional survey were adult Nigerian females. They were students of the Ladoke Akintola University of Technology (LAUTECH), Ogbomoso, the LAUTECH Teaching Hospital, Osogbo both in

South West Nigeria. Others were drawn from the school of nursing and among the health workers (nurses and doctors) of the LAUTECH Teaching Hospital. A pre-tested open-ended self-administered questionnaire was used for the study, which was carried out during the last quarter of 2002. The questionnaire contained questions on the background characteristics of respondents, their awareness of anti-tetanus immunization, if they had ever taken the immunization, how many doses of anti-tetanus immunization they have received and reason for taken them. About 450 questionnaire forms which was about 20% above the sample size estimated (to allow for non-response and incomplete filling of the questionnaire) were distributed to the female students and workers in the study area using the stratified random sampling method. The survey covered female students in the humanities, engineering, medical faculties; the female staff of the teaching hospital and students in the institution's nursing school. A total of 394 adult female respondents filled the questionnaire adequately enough for analysis. The percentages with the anti-tetanus immunization status were calculated as described by the WHO EPI coverage survey (11). Computer using the EPI-INFO version 5.0 statistical package (12) was used for data analysis. The Chi-square test was used to test level of association and significant value was pre-set at 0.05.

#### **RESULTS**

Table 1 presents information on some selected background characteristics of the 394 adult female respondents. Majority of the respondents are between 20 and 29 years of age (69.0%), while very few 3.6% and 5.0% were below 20 years and above 40 years of age

respectively. There were more (71.3%) respondents of the Yoruba ethnic group than the other ethnic groups (28.7%). Most of the respondents (62.7%) were Christian, 32.5% were Muslim and the rest 4.8% belong to other religions. Of the respondents, 56.6% were single and 40.4% were married. More than three quarter (78.9%) of the respondents had post secondary education, 14.2% had secondary education while only 6.9% had less than secondary education. About 48.2% of the respondents can be classified as health professionals, while 51.8% were non-health professionals.

Table 2 contains information about the level of awareness and compliance with the anti-tetanus immunization among the respondents. A total of 275 (69.8%) out of the 294 adult female respondents reported that they were quite aware of one type or the other of the anti-tetanus immunization programmes. However, only 97 (24.6%) of the respondents have received more than two doses of tetanus immunization in adulthood (apart from childhood immunization), which are considered enough to confer some immunity on the recipient. Of the respondents, 37.6% had been pregnant and given birth to a child before. (Table 1)

Table 3 shows that there is no significant difference between respondents' educational status and level of awareness of anti-tetanus immunization ( $p > 0.24$ ); while Table 4 shows a highly significant association ( $p < 0.001$ ) between respondents' occupation/profession and awareness of anti-tetanus immunization. Table 5 shows that majority (41.4%) of the respondents are aware of the 2 doses of anti-tetanus immunization for pregnant women; 33.1% are aware of the TT1-TT5 immunization schedule for women of childbearing age; while only 13.2% are aware of the anti-tetanus booster dose for secondary school students. Table 6 shows that majority (56.1%) of the respondents who ever took anti-tetanus in adulthood did so during their pregnancies; 21.2% got the immunization post injury; 10.6% took it as booster dose while in secondary school and only 7.7% took it as part of pre-employment medical test. More than half (51.2%) of the respondents who ever received anti-tetanus immunization in adulthood took the last dose over a year ago, while 46% took the immunization during the last one-year (Table 7). Of the 148 respondents who ever gave live birth, 54.0% received two doses of TT during the last pregnancy; 8.8% received more than 2 doses; while 37.2% did not receive or received only one dose of TT during their last pregnancy (Table 8).

**Table 1: Selected Background Characteristics of Respondents**

Variables		Frequency [N]	Total [394] [%]
Age group [in yrs]	15-19	14	3.6
	20-24	135	34.3
	25-29	137	34.7
	30-34	59	15.0
	35-39	29	7.4
	40+	20	5.0
Marital status	Single	223	56.6
	Divorced/Widowed	12	3.0
	Married	159	40.4
Ethnic group	Yoruba	281	71.3
	Ibo	67	17.3
	Hausa	25	6.3
	Others	21	5.3
Religion	Christianity	247	62.7
	Muslim	128	32.5
	Others	19	4.8
Educational status	No formal schooling	5	1.3
	Primary	22	5.6
	Secondary	56	14.2
	Post secondary	311	78.9
Occupational/ Professional status	Nursing/Medical		
	Students	128	32.5
	Health workers	62	15.7
	Other students	146	37.1
	Other non-health Workers	58	14.7
Ever given birth To a child before	Yes	148	37.6
	No	246	62.4

**Table 2: Distribution of respondents by level of awareness and compliance with the anti-tetanus immunization programme.**

Variable		Frequency	Total [394]
Awareness			
Antitetanus Immunization	Yes	275	69.8
	No	119	30.2
Compliance with			
Antitetanus Immunization [No. of doses TT. received]	Received 2+ doses	97	24.6
	Rec. only 2 doses	87	22.6
	Rec. only one doses	62	15.7
	Never received	148	37.6

**Table 3. Distribution of respondents by level of education and awareness of Anti-tetanus immunization programme**

Educational status	Awareness		Total
	Yes [%]	No [%]	N [%]
Primary or no formal Education	16 [59.3]	11 [40.7]	27 [100.0]
Secondary and post Secondary education	257 [70.0]	110 [30.0]	367 [100.0]
Total	275 [69.8]	119 [30.2]	394 [100.0]

$X^2 = 1.37; p > 0.24.$

**Table 4. Distribution of respondents by occupational/professional status and awareness of anti-tetanus immunization.**

Occupation/Profession	Awareness		Total
	Yes [%]	No [%]	N [%]
Health professional	120 [63.2]	70 [36.8]	190 [100.0]
Non-health professionals	155 [76.0]	49 [24.0]	204 [100.0]
Total	275 [69.8]	119 [30.2]	394 [100.0]

$X_2 = 7.65; p < 0.001.$

**Table 5. Distribution of the type of anti-tetanus immunization schedule that the respondents were aware of**

Type of anti-tetanus immunization schedule	F [N]	[%]
DPT1-DPT3 at birth	53	12.3
Booster dose of TT immunization in the Secondary School	57	13.2
2 doses of TT immunization given during pregnancy	179	41.4
TT1-TT5 immunization schedule for woman of childbearing age	143	33.1
Total	432	100.0

Table of Multiple Responses.

**Table 6. Reasons for taken anti-tetanus immunization the last time**

Reasons	F [N]	[%]
Booster dose taken at secondary School	26	10.6
Post-injury prophylaxis	52	21.2
Part of pre-employment medical examination	19	7.7
During the last pregnancy	138	56.1
Cannot remember	11	4.4
Total	246	100.0

**Table 7. Distribution of the period when respondents received the last dose of Anti-tetanus immunization**

Period	F[N]	[%]
About 3 months ago	54	22.0
About 6 month ago	29	11.8
About 1 year ago	30	12.2
Over 1 year ago	126	51.2
Cannot remember when last	7	2.8
Total	246	100.0

**Table 8. Distribution of anti-tetanus status during pregnancy**

No of doses of TT immunization received during last pregnancy	F [N]	[%]
1 dose	45	30.4
2 doses	80	54.0
More than 2 doses	13	8.8
None	10	6.8
Total	148	100.0

## DISCUSSION

The results of the present survey have shown a high level of awareness (69.8%) of anti-tetanus immunization among the women surveyed. This high level of awareness could be due to the high educational standard of the respondents who have mostly (93.1%) attained secondary school or post secondary school education. This further confirms the work of other workers of the overriding influence of female education over other strategies used in health care delivery (7,13). However, compliance with this programme was quite low among respondents, as only 46.7% of the respondents had received two or more doses of Tetanus Toxoid (TT) in adulthood, which are considered enough to confer immunity on the recipient for about 5 to 10 years. This was quite close to what was obtained in the study of Abuwa, *et al* (7). In this survey 53.3% could be said to have partial or no immunity against tetanus.

The study showed a highly significant association between respondents' occupation/profession and awareness ( $p < 0.001$ ). This is not unexpected since a tertiary health institution is a place where both health workers and various groups of health students must have regularly received information about anti-tetanus immunization programme. Also they must have been involved in the dissemination of Information, Education and Communication (IEC) materials about it to patients and the public at large. Of the various anti-tetanus immunization schedules, majority (41.4%) of the respondents were aware of the usual 2 doses of tetanus toxoid immunization for pregnant women. This seems to be more popular among the parturient women. Only 33.1% were aware of the TT1-TT5

immunization schedule for women of childbearing age. This is quite worrisome since this is a major strategy that has since been formulated by WHO and already adopted by the Nigerian government since the early nineties to achieve worldwide elimination of maternal and neonatal tetanus as a public health problem by the year 2005 (14).

Most of the respondents (62.4%) in this survey had one time or the other received anti-tetanus immunization in adulthood. Of this number, 56.1% received the last dose during their last pregnancies. This further confirms its popularity and possible accessibility during antenatal clinics among the women surveyed as against the 21.2% that took it after sustaining an injury. Some respondents see no need for the immunization since they have not sustained any injury or were never pregnant to have a child. The survey also showed that, of the 148 of the respondents that ever gave birth to a child, 62.8% received at least 2 doses of TT immunization during their last pregnancies. This however, is more than what was reported in the survey in River States (7). The higher coverage in this study may possibly be due to the fact that the survey was conducted among fairly more educated women who are residing in an urban community where affordability, availability and accessibility to the vaccine is better than what was obtained in the earlier study which was conducted in semi-urban and rural areas. Unfortunately too, more than one third (37.2%) of those who had delivered a baby before did not take TT, and if they did, they received only one dose of TT immunization during their last pregnancy. This could not confer any immunity against tetanus on the mothers nor the children. This is quite

disturbing but it could be a reason for the continuing high prevalence of cases of maternal and neonatal morbidity\* and mortality from tetanus infection in our environment and the third world as documented by earlier reports (1, 2, 15).

This survey has shown a high level of awareness of anti-tetanus immunization programme among the adult females surveyed but a relatively low level of compliance as only less than half of those surveyed ever took the immunization in adulthood. It also revealed that some women even in the urban community do not receive anti-tetanus immunization during pregnancy.

It is therefore strongly recommended that government should refocus its attention on the immunization programmes in the country in terms of media health programme announcement; adequate logistic and material supports to the programme and this must be on a continuous basis. Sustainability in programme execution has always been a problem at all levels of health care delivery system in Nigeria.

The introduction of an appropriately targeted immunization for example to the students of the Universal Basic Education scheme will undoubtedly increase anti-tetanus immunization coverage and raise the herd immunity against tetanus infection in the country. There should be continuing health education for women and the IEC materials judiciously used during health education talks. It is expected that this will ultimately promote behavioural change in our women to go for anti-tetanus immunization that will lead to achievement of high herd immunity and eradication of tetanus. The health workers also require training and retraining to upgrade their capacity building, which will enable them provide qualitative immunization services.

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