

**Immunization practices among mothers whose babies developed Neonatal Tetanus: Need for Review of the Nigerian National Policy on Immunization.**

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**Abstract**

**Objective:** *To identify the major problems encountered in the implementation of the policy on immunization of pregnant women against tetanus in Ibadan, Nigeria.*

**Methods:** *In a descriptive cross-sectional study design, 140 mothers whose babies were admitted for neonatal tetanus into the major referral hospitals in the city of Ibadan over a 12-month period were recruited into the study.*

**Results:** *Ante-natal clinic (ANC) was attended by 121 (86.4%) of mothers but only 31 (25.6%) of these mothers received full immunization. Nearly three out of four mothers attended ANC for 5 to 20 times (mean = 8 times), indicating missed opportunities for immunization. The attendance by 74.3% of the mothers was spread over 2 or more months. Ignorance and lack of funds were the major reasons given by mothers for either not attending ANC or for not receiving full immunization. Age, 20 years or more ( $p=0.003$ ), parity of one or more ( $p=0.004$ ), and formal education ( $p=0.02$ ) are all significantly associated with having received one or two doses of tetanus toxoid (T.T).*

**Conclusions and Recommendations:** *This study shows that the national policy on tetanus immunization of women is poorly implemented. A shift of emphasis from immunizing pregnant women with two doses of TT at ANC to that of immunizing all women of child bearing age with the WHO recommended schedule of five doses of TT to give life-long immunity is the suggested strategy to combat the present implementation problems.*

**Keywords:** Barriers, Implementation, National Policy, Tetanus Immunization, Practices, Pregnant Women, Nigeria.

**Introduction**

Neonatal tetanus (NNT) is usually associated with under-development. Most cases result from failure to protect the pregnant mother against tetanus and poor hygienic obstetric procedure resulting in increased chances of exposure of the umbilicus to tetanus bacterium or spores. It is a major cause of preventable morbidity and mortality in the neonatal period in Nigeria, the African region, and many other developing countries.<sup>1,2</sup>

In Nigeria, NNT has been targeted for elimination through the implementation of the National Program on Immunization (NPI). The Nigerian National Immunization Policy gives statements that are specific for maternal and child services.<sup>3</sup> The policy gave comprehensive guidelines for the provision of vaccines and the use of a national immunization schedule in order to attain optimal immunologic protection against the target diseases for all children as early as possible, women of child-bearing age and other at-risk groups, including HIV-positive individuals. It further states that two doses of tetanus toxoid should be given to pregnant women. A review of the immunization coverage in Nigeria however revealed that the current immunization coverage rate with two doses of tetanus toxoid in pregnant women is very low at only 26%.<sup>4</sup> Furthermore, a review of certain studies showed that 2%,<sup>5</sup> 9%,<sup>6</sup> 33%,<sup>7,8</sup> and 36.4%<sup>9</sup> of mothers in the respective studies were immunized with tetanus toxoid. This study was undertaken to identify the major factors militating against achieving high immunization coverage in pregnant women attending ANC with a view to making recommendations for improvement.

**Methods**

**Study Area:** Ibadan is an indigenous African city, the capital of Oyo state of Nigeria. It lies

between latitude 7° 0' and 9° 30' North of the equator and between 2° 30' and 5° 30' East of the prime meridian. The present population is well over 2 million (1991 National Population Census).<sup>10</sup>

**Study Design:** This was a descriptive cross-sectional study conducted in all secondary level health care institutions in Ibadan (Adeoyo Maternity Hospital, Oluyoro Catholic Hospital, Catholic Hospital Eleta and Oni Memorial Children’s Hospital) and the only tertiary health care institution, the University College Hospital (UCH). These hospitals are the major referral centers for the primary health care centers and all private facilities and serve all the different socio-economic sectors. All cases seen at the primary level are routinely referred to these facilities.

**Sampling technique:** A total sampling technique was utilized. All mothers of cases of neonatal tetanus admitted into these hospitals over a 12-month period were recruited into the study.

**Instrument of study:** The instrument used was

a pre-tested structured questionnaire administered to the mothers of the NNT cases by trained research assistants. Demographic data, tetanus toxoid vaccination history, ANC attendance record, frequency of attendance, duration of attendance, reason for non-attendance and non-vaccination were collected.

**Data Analysis:** The details were entered into the computer using EPI INFO version 6 software package and the statistical chi-square test was used to compare proportions of categorical variables.

**Ethical considerations:** Approval for the study was obtained from the administration of the hospitals involved in the study. Informed consent was also obtained from each respondent.

**Results**

A total of 149 mothers with babies that had NNT were admitted into the hospitals during the study period. One hundred and forty (94.0%) of them that consented were enrolled into the study and the 9(6.0%) who refused were excluded. Of the 140 respondents,

twenty-two (15.7%) mothers were teenagers while 118(84.3%) were twenty years or more. Eighty-eight (62.9%) mothers were Moslems while 52(37.1%) were Christians. Seventeen (12.1%) of the mothers had no formal education while 123(87.9%) had at least primary education. Seventeen (12.1%) mothers were housewives, 93(66.4%) were unskilled workers while 29(20.7%) were skilled and 1(0.7%) was a professional. Eighty-eight (62.8%) mothers were primigravidas, 33(23.6%) were primiparas, 8(5.7%) had parity of two while 11(7.9%) had parity of three or more.

**Table 1: Stage of Gestation of Mothers of NNT Cases at Registration in ANC**

Gestational age at registration in ANC	No. of Mothers (%) n=121
First semester	6 (5.0%)
Second semester	62 (51.2%)
Third semester	53 (43.8%)
Total	121 (100.0%)

One hundred and twenty-one (86.4%) mothers registered at ANC while 19 (13.6%) mothers did not. Table 1 shows the gestational stage of mothers at registration in ANC. Only 6 (5.0%) registered before the second trimester. . Reasons given by the nineteen (13.6%) mothers who did not attend ANC ranged from ignorance (57.9%) and lack of funds (31.6%) to religious belief (10.5%). Of the 121(86.4%) mothers that attended ANC, the frequency of attendance in 34 (28.1%) was between 1 and 4 times while the majority, 87 (71.9%) attended with a frequency of 5 to 20

**Table 2: Reasons for not receiving full Immunization among respondents who attended ANC**

Reasons	No. (%) of Mothers	
	NONE	1 DOSE
Ignorance	23 (53.5%)	12 (25.5%)

## Asekun-Olarinmoye: Barriers to implementation of immunization policy

Lack of funds	5 (11.6%)	0 (0.0%)
ANC at church house + ignorance	10 (23.3%)	0 (0.0%)
Missed appointment date	1 (2.3%)	28 (59.6%)
Hospital on strike	0 (0.0%)	2 (4.3%)
Vaccine out of stock in hospital	4 (9.3%)	5 (10.6%)
Total	43 (100.0%)	47 (100.0%)

times. The average number of attendance was 8 times. Sixty (49.6%) mothers that attended ANC did so for a duration of 3 to 6 months while 44 (36.4%) and 17 (14.0%) attended for 2 months and 1 month respectively. Of the 121 mothers that attended ANC, only 31 (25.6%) had full immunization with two doses of tetanus toxoid (TT). Forty-seven (38.8%) mothers had incomplete immunization with one dose of TT while 43 (35.5%) were not immunized at all. Furthermore, all the nineteen respondents who did not attend ANC received no immunization, bringing the non-immunized respondents to a total of 62 (44.3%) of the 140 respondents. The ratio of the percentage of respondents fully immunized against tetanus to the percentage that attended ANC (TP ratio) in this study was 1:3.3.

Table 2 shows reasons for not receiving full immunization in respondents that attended ANC. Ignorance as well as ANC care at church houses were the commonest reasons (76.8%). Association between selected socio-demographic characteristics and immunization status of respondents is shown in Table 3. Age, 20 years or more ( $p=0.003$ ), parity of one or more ( $p=0.004$ ), and formal education ( $p=0.02$ ) are statistically significantly associated with having received immunization with either one or two doses of tetanus toxoid while occupational status and religion were not statistically significantly associated with respondents' immunization status ( $p>0.05$ ).

### Discussions

This study has identified the major factors and obstacles against the achievement of high immunization rate with two doses of tetanus toxoid in mothers attending ANC whose babies fell victim to NNT. Seventy-eight (64.5%) mothers that attended ANC had tetanus toxoid immunization, but only about a quarter of them had full immunization with two doses of the toxoid. These figures even though low are higher than those reported from other parts of the country.<sup>4</sup> This raises the crucial issue of the failure of the current strategy to achieve the expected immunization coverage of pregnant women that could result in a significant reduction in the prevalence of neonatal tetanus. The current national immunization coverage rate with two doses of tetanus toxoid is abysmally low at only 26%.<sup>4,11</sup> It could be seen from the findings in this study that the practice of vaccinating pregnant women is not the best for preventing NNT in this environment. This is due to the fact that many women do not receive ante-natal care at

**Table 3: Association between selected socio-demographic characteristics and immunization status of respondents.**

Socio-demographic Variables	Immunization Status of Respondents		Total	x <sup>2</sup> value	p-value
	None *Freq. (%)	1 or 2 doses of TT *Freq. (%)			
Age					
<20	16 (72.7)	6 (27.3)	22(15.7)	8.56	0.003
>20	46 (39.0)	72 (61.0)	118(84.3)		
Parity					
None(Primigravida)	49 (55.7)	39 (44.3)	88 (62.9)	12.47	0.004
>1	13 (25.0)	39 (75.0)	52 (37.1)		
Educational Status					
No formal Educ.	12 (70.6)	5 (29.4)	17 (12.1)	5.43	0.02
Formal Educ.	50 (40.7)	73 (59.3)	123 (87.9)		
Occupational Status					
Unemployed	5 (29.4)	12 (70.6)	17 (12.1)	1.73	0.19
Employed	57 (46.3)	66 (53.7)	123 (87.9)		
Religion					
Islam	37 (42.0)	51 (58.0)	88 (62.9)	0.48	0.49
Christianity	25 (48.1)	27 (51.9)	52 (37.1)		

all and a sizeable number of those that receive ante-natal care register late in pregnancy, making it impossible to ensure the administration of the required two doses of tetanus toxoid for these pregnant women. The factors of non-attendance and late registration in ANC act in synergy with many other factors militating against the elimination of NNT from the Nigerian community ( for example, cultural practices on umbilical care, scarification, circumcision and ear piercing etc). So, it is not surprising that whereas dramatic decreases in the prevalence of measles and poliomyelitis have been reported, the impact of the National Program on Immunization (NPI) on the prevalence of neonatal tetanus has not been impressive. It is important that the WHO's recommended anti-tetanus immunization schedule of five dose of anti-tetanus vaccine for all women of child-bearing age that has been

adopted by the Federal Ministry of Health be implemented nation-wide. This will ensure that most of the women will already be fully immunized even before becoming pregnant and sidetrack most of the major hindrances and barriers identified in the present study.

The study has revealed that the most common reasons for none or partial immunization is ignorance. Other researchers' findings corroborate this fact.<sup>12,13</sup> One may infer that the health delivery system is partially responsible for the low coverage via inadequate effective health education and the instances of missing the opportunities to immunize for example when vaccines are out of stock. Thus Seventy-five percent of the opportunities for tetanus immunization were missed in the study population. Similar finding was reported by Delpont,<sup>14</sup> Borges de Mattos et al,<sup>15</sup> Kalaca et al,<sup>16</sup> Verma et al<sup>17</sup> Edett et al<sup>18</sup> and Buekens et

## Asekun-Olarinmoye: Barriers to implementation of immunization policy

al.<sup>19</sup> These were mothers who had received antenatal care on a sufficient number of occasions for them to have had the opportunity of receiving the required two TT doses. . Because of the serious consequences of NNT infections, every effort should be made to identify and immunize eligible women when they bring their children for immunization or when they attend either ANC or any other clinics.

Of particular interest is the fact that babies of the partially immunized mothers and especially those of the fully immunized mother also had NNT. This could probably be due to mothers having received non-potent, non-viable vaccines. It is very important that the cold chain be maintained so as to ensure giving viable vaccines to the end users. This points to the fact that NNT is a disease that needs multi-faceted approach; viable potent vaccines should be provided alongside other measures that ensure safe and clean delivery attended by trained personnel.

Mother's young age, being a primigravida and lack of formal education were shown to be statistically significantly related to non-immunization status. These are the identified target groups that programme planners should focus on and develop appropriate health education strategies for.

A limitation of this study is that it has focused on a selected group (mothers whose babies had NNT) and the responses to questions could have been influenced by attempts to cover their acts of negligence. Also, another population of mothers whose babies did not have NNT could have been included as controls. Further research in this area involving all mothers

during puerperium is recommended.

In conclusion, this study showed that policy statements on immunization of women against tetanus are poorly implemented. There is need for periodic assessment of the programs and services put in place in order to identify deficiencies with a view to correcting such. This is a very important issue if the millennium development goal of reducing maternal and infant morbidity and mortality is to be achieved.

It is recommended that health education through mass media with specific messages targeting the high risk groups identified in this study be intensified. Also, there should be provision of tetanus immunization materials in every clinic providing contact between women and health workers and concerted efforts should be made by government to reduce the out of stock syndrome in the provision of vaccines. Mobile immunization clinics should be provided by government to service the mission homes and training should be provided for their personnel. Periodic mass immunization of school girls and women of child bearing age and a shift from emphasis on immunizing pregnant women with two doses of TT at ANC to that of immunizing all women of child bearing age with the WHO recommended schedule of five doses of TT to give life-long immunity even before getting pregnant are the suggested strategies to combat the present policy implementation problems. This will of course call for increased supply of vaccines, therefore the vaccine supply lines must be strengthened by government in all the three tiers of health care delivery.

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