FREQUENCY OF TETANUS TOXOID IMMUNIZATION AMONG COLLEGE/UNIVERSITY FEMALE STUDENTS OF KARACHI

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Background: Tetanus is a deadly infectious disease for which immunisation is available in EPI at both infant level and for females of reproductive age. More than 95% of patients who develop tetanus have not been previously immunised. Objectives of the study were to determine the frequency of tetanus vaccination and to access the awareness of immunisation among females studying in 11 girls' colleges of Karachi and University of Karachi. **Method:** A cross sectional study was conducted among 1,407 females studying in colleges and University of Karachi from April to August 2007 using a prescribed questionnaire. **Result:** Among 1,407 female students who were interviewed for the study, 232 (16.48%) were not aware about tetanus immunisation program for females of reproductive age. Only 560 students (39.80%) received at least 1 of 5 recommended doses. Only 41 female students (2.91%) received complete course of 5 doses. **Conclusion:** Coverage of tetanus immunisation among literate females in most populous city of the country is far behind satisfactory. There is need for awareness and crash programs of tetanus immunisation.

Keywords: Tetanus, Immunisation, Vaccination, Toxoid

INTRODUCTION

Tetanus results from infection with Clostridium tetani, a commensal in the gut of humans and domestic animals which is found in soil.[1] Spores in soil may germinate when introduced into a wound.[2] Tetanus is the only vaccine preventable bacterial disease that is infectious, but not contagious.[3] Estimated true global incidence of tetanus is 700,000 to 1,000,000 cases per year.[4] Even with treatment, the case fatality rate can be as high as 80–90%.[5] During 2002 The total number of deaths caused by tetanus world wide was estimated at 213,000 of which neonatal tetanus was estimated to be about 180,000 and maternal tetanus about 15,000–30,000.[6] In western world, its incidence and clinical spectrum has undergone a remarkable change with development of vaccination and mechanisation.[7] Major burden of the morbidity and mortality of tetanus is shared by developing countries without an immunisation program.[8] Lack of maternal immunisation against tetanus is the single most important causative factor. Moreover, it is usually associated with home deliveries conducted by untrained personnel in unsanitary conditions.[9] This condition put their newborn babies at risk for neonatal tetanus, which is defined as tetanus occurring in the newborn within 28 days after birth.[10] More than 95% of patients who develop tetanus have not been previously immunised.[11]

Schedule of tetanus immunisation among females of reproductive age (15–45 years) as recommended by EPI is shown in Table-1.

Table-1: Schedule of tetanus immunisation

TT I	First Contact
TT2	One month after TT1
TT3	Six months after TT2
TT4	One Year after TT3
TT5	One Year after TT4

TT=Tetanus Toxoid vaccine

The objectives of this study were to determine the frequency of tetanus vaccination and to access the awareness of immunisation among females studying in 11 girls' colleges of Karachi and University of Karachi.

MATERIAL AND METHODS

This cross-sectional study was conducted from April to August 2007 in 11 girls' colleges and in University of Karachi. Female students were selected form attendance register and selection of 1,407 students was done by simple random sampling method. Students were interviewed filling a pre-tested questionnaire. Awareness about tetanus vaccination program and immunisation status of students was determined by both open and close ended questions. Data was cleaned and analysed using SPSS-12.

RESULTS

The age group of the sample was between 16–25 years (Mean=20 years). Among 1,407 females 13 were married. The house-hold income of the respondents is shown in Table-2. Most of the females belonged to upper middle class families.

One thousand three hundred and six (1,306) students in the study group correctly replied that

Tetanus is a deadly disease which is infectious through wounds and is vaccine preventable disease.

Among the respondents, 232 students replied that they never heard about tetanus immunisation program for females of reproductive age. None of the respondents remembered about their primary vaccination. Only 560 students (39.80%) received at least 1 of 5 recommended doses of tetanus toxoid. In the study group, 847 female students (60.19%) never received a dose of tetanus toxoid. Immunisation status of 560 female students who received at least 1 dose of tetanus toxoid immunisation is shown in Table-3.

Eight hundred and forty-seven (847) female students (60.19%) were not vaccinated at all; 456 (32.40%) had incomplete status of immunisation, i.e., they had missed a dose which was due; and only 86 (6.11%) were appropriately immunised, i.e., they were heading according to time schedule of vaccination. Sixteen (1.13%) students were fully immunised, 2 students did not know about number of doses of vaccines they received and their duration.

Two hundred and seventy-five (49.01%) students got vaccinated from private facility; 198 (35.35%) received immunisation from government facility, this included only 4 students receiving TT vaccine from Lady Health Workers; 62 respondents (11.07%) received vaccination from mixed sources (both private and government); and 24 respondents (40.28%) did not remember about nature of facility whether private or government. One student was vaccinated outside Pakistan.

Among 13 married females in the total 1,407 sample size, 5 were having at least one child each. All these 5 married students received 2 recommended doses of tetanus toxoid during their pregnancy. One female aborted her foetus, she had also received 2 doses of vaccines. Among 7 other married students who never became pregnant, only 1 female received 2 doses of vaccines, other 6 were not vaccinated at all.

Table-2: Household income of female students

Households Income (PKR/month)	No. of Respondents
<15,000	9
15,001–25,000	383
25,001–35,000	561
35,001–45,000	319
>45,000	130
Don't know	5

Table-3: Number of doses of tetanus toxoid vaccine received by respondents

No. of doses of Tetanus Toxoid	No. of Females
1st dose only	317
2nd dose only	165
3rd dose	3
4th dose	24
5 complete doses	16
Do not know	2

DISCUSSION

Tetanus is still a major health problem in developing countries and it is associated with a high morbidity and mortality.[12] Pakistan is a high-risk country regarding incidence of tetanus. WHO recommends that 90% of the females in high-risk areas should be vaccinated against tetanus.[3] In this study conducted among educated females of Karachi belonging to good socioeconomic class, the coverage is only 39.80% which is far below WHO recommendations. Countries that have eliminated neonatal tetanus used both supplemental and routine vaccination service delivery to achieve rapid and cost effective elimination.[13]

In developing countries it has been shown that improving women and mothers' knowledge of full immunisation has the potential to increase immunisation of women and children and their health care usage.[14] As this study was conducted among educated females of Karachi, mostly belonging to middle-upper middle class, a good awareness about the disease and immunisation program against tetanus was expected. Awareness about the disease in this study group was more than 92% and knowledge about immunisation program for females of reproductive age was 83.5%. A study conducted in 2004 among 60 females seeking treatment at Civil Hospital Karachi, revealed awareness about TT Vaccination as 59.3%. Coverage of TT vaccination in that sample was 61.5%. This coverage is much better than vaccination status of female college/ university students of Karachi which is 39.80%. This means that a good socioeconomic condition and a good level of knowledge is not all that is required for better immunisation coverage. Other factors like provision of health facility and priority of vaccination among healthy subjects are also important. Since middle and upper middle class population of Karachi usually seeks private practitioners for their heath problems, the role of private practitioners is important in delivery of health services including immunisation.

In our study more than 49% females received their vaccination from private practitioners, whereas another 11% utilised private practitioners along with government facility. A KAP study conducted among 100 qualified MBBS doctors practicing in Karachi showed that only 25% General Practitioners had adequate knowledge about pre-exposure TT immunisation where only 8% had vaccine at their clinics.[8] This may be one of the reasons that although awareness about tetanus is good but immunisation coverage is low in understudy subjects as our private practitioners are not playing their role effectively in immunisation.

A good number of our respondents started TT vaccination, receiving 317 first dose and 165 second dose but somehow they were not able to keep with the

schedule as 3rd and 4th dose recipients are only 3 and 24 respectively.

Awareness and instructions regarding timely completion according to schedule should be stressed by health care provider. A favourable attitude and dedication is required for correct practices as evident by one of the study in which handouts given to the parents by the physician had increased tetanus immunisation by three fold.[15] Letter and computer based reminders to the patients by the physicians were found to have significantly increased the rate.[16,17]

House visits and effective role of Lady Health Workers is also important. Among 506 students who received at least one dose of TT vaccine, only 4 were immunised by Lady Health Workers. A study conducted in Peshawar showed that visit of Lady Health Workers had a positive impact on vaccination status of females and is an independent factor for vaccination status of females.[3]

CONCLUSION

Contrary to expectations the TT coverage among literate females of good socioeconomic background was poor although awareness about disease was good. Health care providers, particularly private practitioners and LHW can play a vital role in imparting knowledge regarding immunisation as well as vaccination. Crash programs in colleges and universities needs to be conducted by EPI to target this neglected group of females properly vaccinated.

REFERENCES

1. Allen CMC, Lueck CJ, Dennis M. Neurological diseases. In: Boon NA, College NR, Walker B R, Hunter JAA, eds. Davidson's Principles and Practice of Medicine.20th ed. New Delhi: Churchill Livingstone; 2002.p. 1232–3.
2. Chambers H F, Infectious Diseases: Bacterial and Chlamydial. In: McPhee SJ, Papadakis MA, Tierney LM Jr, eds. Currant Medical Diagnosis & Treatmet.46th ed. McGraw Hill; 2007.p.1440–1.
3. Afridi NK, Hatcher J, Mahmud S, Nanan D. Coverage and factors associated with Tetanus Toxoid Vaccination status among females of reproductive age in Peshawar. J Coll Physicians Surg Pak 2005;15:391–5.
4. Thwnites CL, Farrar JJ. Preventing and treating tetanus (editorial) Br Med J 2003;326:117–8.
5. Park K. Epidemiology of communicable diseases. Park's text book of preventive and social medicine 27thed. Jabalpur: Banarsidas Bhanot; 2007.p. 260–4.
6. WHO 2006 Weekly Epidemiological Record No. 20, 19th May 2006.
7. Bardenheier B, Prevots R, Khetsuriani N, Wharton M. Tetanus Surveillance United States. Morb Mortal Wkly Rep CDC Surveill Summ 1998:47(SS-2):1–13.
8. Ahmed SI, Baig L, Thaver IH, Sidiqui MI, Jafery SIA, Javed A, Knowledge, Attitudes and practices of General Practitioners in Karachi District Central about Tetanus Immunization in adults. J Coll Physicians Surg Pak 2001;51:367–9.
9. Ali M, Mazhar AU, Haq MIU, Tetanus Neonatorun. Pak Peads J 2002;26(4):187-90.
10. Zeb A, Zaidi SAH, Jehan I. Knowledge, Attitude and Practices of reproductive age females about tetanus toxoid vaccine: A pilot study. J Coll Physicians Surg Pak 2006;16:791–3.
11. Talati N, Salahuddin N, Factors affecting tetanus mortality in a tertiary care hospital in Pakistan. Infect Dis J Pakistan 200;10:13–5.
12. Anuradha S. Tetanus in adults-A continuing problem: An analysis of 217 patients over 3 years from Delhi, India, with special emphasis on predictors of mortality, Med J Malaysia 2006;61(1):7–14.
13. Berman P, Quinley J, Yusuf B, Anwar S, Mustaini U, Azof A, *et al*. Maternal tetanus immunization in Aceh Province, Sumatra, The cost effectiveness of alternative strategies. Soc Sci Med 1991;33:185–92.
14. Streatfield K, Singarirnbun M, Diamond I. Maternal education and child immunization. Demography 1990;27:447–55.
15. Cates CJ.A handout about tetanus immunization.Influence on immunization rate in general practice, Herdfordshire;Bushey Health Center, Br Med J 1990;300:789–90.
16. Rosser WW. Hutchison BJ, McDowell I. Use of reminders to increase compliance with tetanus booster vaccination. Can Med Assoc J 1992;146:911–7.
17. Omstein S,Garr D, Jenkins RG. Computer generated physicians and patients reminders tools to improve population adherence to selected preventive services. Fam Pract J 1991;32:2–89.

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