KNOWLEDGE, ATTITUDE, PRACTICES OF NEEDLESTICK INJURIES AMONG DENTAL STUDENTS

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ABSTRACT-

**INTRODUCTION:** Dental students who are at risk of exposure to blood borne viruses such as Hepatitis B virus, Hepatitis C virus and Human Immune deficiency Virus following needle stick injuries have been recognized as occupational hazards for dentists and other health care professionals. **MATERIAL AND METHODS:** A study was conducted by using a structured, self-administered & pre tested questionnaire was distributed among 218 dental students along with covering letter explaining the purpose of the study. Sample included 3rd,4th year BDS students and Interns. **RESULTS:** Common cause for needle stick injuries are careless attitude 96(49%), due to stress 71(36.2%) and over burden 29(14.8%), stress and over burden seen commonly among interns and careless attitude among final and followed by 3rd BDS, which is statistically significant. X2=12.102; P=.017. **Conclusion:** Despite knowing the risks, frequency of needle stick injury was observed among participants reflecting bad practice and careless attitude towards work.

Key words: Careless attitude, dental students, needle stick injuries.

**INTRODUCTION**

Needlestick injury is a percutaneous piercing wound typically set by a needle point, but possibly also by other sharp instruments or objects.1 One of the most serious threats health care worker face during their clinical practice is the possibility of exposure to deadly viruses. Health care workers including dental students who are at risk of exposure to blood borne viruses such as Hepatitis B virus (HBV), Hepatitis C virus (HCV) and Human immune deficiency virus(HIV) following Needle stick injuries (NSIs) have been recognized as occupational hazards for dentists and other health care professionals.2,3 Generally NSIs cause only minor bleeding or visible trauma, however, even in the absence of bleeding the risk of virus infection remains.1

Needlestick injuries may occur not only with freshly contaminated sharps, but also after some time, with needles that carry dry blood. While the infectiousness of HIV and HCV decrease with in a couple of hours, but HBV remains stable during desiccation and infectious for more than a week.1 When not disposed of properly, needles can become concealed in linen or garbage and injure other workers who encounter them unexpectedly.4

These injuries can occur at any time when people use, disassemble or dispose of needles.5 Therefore, there was a need for a study to determine the prevalence of NSIs and to assess the degree of knowledge, attitude and practices towards needle stick injuries among dental students in one of the south Indian district.

**MATERIAL AND METHODS**

A descriptive cross sectional study was conducted by using structured, self - administered pre tested questionnaire was designed and distributed among 218 dental college students in the month of January 2014 along with covering letter explaining the purpose of the study and reassuring students of their anonymity in one of the south Indian district. Sample included 3rd year, 4th year BDS students and Interns. Ethical approval for the study was obtained from institutional ethical committee. The data was analyzed using SPSS software, version 20 and categorical variables were analysed using chi-square test at 5% level of significance.

**RESULTS**

Out of 218 participants, only 196 had been returned the completed questionnaire with respond rate of 89.9%. Of those 196 dental students 70(35.7%) were males and 126(64.3%) were females, with mean age of 22.4 years. Among the different categories of responding dental students, 50(25.5%) were 3rd year students, 68 (34.7%) were 4th year students and 78 (39.8%) were Interns. Of these 13(14.9%) 3rd year BDS, 29(33.3%) 4th year BDS and 45(51.8%) interns have experienced NSIs with total of 87(44.4%) students were exposed to needle stick injuries. Majority of them experiences to NSIs are interns and least experienced are 3rd year BDS, which is statistically significant. (X2 =12.525; p=.002, table 1).

TABLE 1: Distribution of study subjects according to experience of needle stick injuries

|  |  |  |  |
| --- | --- | --- | --- |
| YEAR | YES | NO | TOTAL |
| III BDS | 13(14.9%) | 37(33.9%) | 50(25.5%) |
| IV BDS | 29(33.3%) | 39(35.8%) | 68(34.7%) |
| INTERNS | 45(51.8%) | 33(30.3%) | 78(39.8%) |
| TOTAL | 87(44.4%) | 109(55.6%) | 196(100%) |

X2 =12.525,P=.002(significant)

Number of times exposed to NSIs are 23(11.7%) once, 18(9.2%) twice and 35(17.9%) more than twice and 11 (5.6%) don’t remember.

Common cause for needle stick injuries are due to careless attitude 96(49%), due to stress 71(36.2%) and over burden 29(14.8%). Stress and over burden commonly seen among interns and careless attitude among 4th year and followed by 3rd year BDS, which is statistically significant.( X2=12.102; p=.017, table 2).

TABLE 2: Reasons for causing needle stick injuries

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| YEAR | STRESS | OVER BURDEN | CARELESS | TOTAL |
| III BDS | 12(16.9%) | 7(24.2%) | 31(32.3%) | 50(25.5%) |
| IV BDS | 27(38%) | 5(17.2%) | 36(37.5%) | 68(34.7%) |
| INTERNS | 32(45.1%) | 17(58.6%) | 29(30.2%) | 78(39.8%) |
| TOTAL | 71(36.2%) | 29(14.8%) | 96(49%) | 196(100%) |

X2=12.102,p=.017(significant)

84(42.9%) students told that they clean the injured area with spirit swab, 65(33.2%) told that wash the injured area with soap and water and 20(10.2%) told that allow injury to bleed, which is statistically significant. X2= 15.901; p=0.044.

72(36.7%) told that NSIs occur during giving injection, followed by 58(29.6%) for recapping needle, 30(15.3%) during bending needles by hand, 31(15.8%) suturing and least by restorative instruments, which is not significant X2=13.414; p=.098. Table 3 shows 163(83.2%) have told that they recap needle after injection, which is not statistically significant. (X2=3.060; p=.21).

TABLE 3: Recapping of needle after use

|  |  |  |  |
| --- | --- | --- | --- |
| YEAR | YES | NO | TOTAL |
| III BDS | 45(90%) | 5(10%) | 50(100%) |
| IV BDS | 57(83.8%) | 11(16.2%) | 68(100%) |
| INTERNS | 61(78.2%) | 17(21.8%) | 78(100%) |
| TOTAL | 163(83.2%) | 33(16.8%) | 196(100%) |

X2=3.060,P=.21(not significant)

Majority of study subjects use single hand technique 114(58.2%) and seen more among interns and 4th bds are 47(41.2%) and 44(38.6%) respectively. 3rd BDS students use both hands 22(44.9%) to recap the needle, which is statistically significant (x2=14.088; p=.007).

79(40.3%) study subjects throw the syringes in garbage, 53(27%) place the syringe in sharp container, 49(25%) use needle destroyer, 15(7.7%) leave it on the working area, which is statistically significant. (X2=20.936: p=.002, table 4).

**Table 4: Distribution of study subjects according to the method of disposal of needles**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| YEAR | LEAVE IT ON THE WORKING AREA | PLACE THE SYRINGES IN SHARP CONTINER | THROW THE SYRINGES IN GARBAGE | USE NEEDLE DESTROYER | TOTAL |
| III BDS | 2(4%) | 14(28%) | 14(28%) | 20(40%) | 50(100%) |
| IV BDS | 1(1.5%) | 17(25%) | 33(48.5%) | 17(25%) | 68(100%) |
| INTERNS | 12(15.4%) | 22(28.2%) | 32(41%) | 12(15.4%) | 78(100%) |
| TOTAL | 15(7.7%) | 53(27%) | 79(40.3%) | 49(25%) | 196(100%) |

X2=20.936,P=.002(significant)

84(42.9%) have told that they are aware of universal precautions, of which 42(53.8%) are interns, which is statistically significant ( X2=8.431: p=.015).

159(81.1%) told that diseases transmitted by NSIs are HIV, Hepatitis B and C, which is not statistically significant.

Only 133 (67.9%) were vaccinated against Hepatitis B (HBV) which is not statistically significant (X2=.562; P=.755, table 5).

**TABLE 5: Vaccination against Hepatitis B**

|  |  |  |  |
| --- | --- | --- | --- |
| **Year** | **Yes** | **No** | **Total** |
| **\III BDS** | **34(68%)** | **16(32%)** | **50(100%)** |
| **IV BDS** | **44(64.7%)** | **24(35.3%)** | **68(100%)** |
| **INTERNS** | **55(70.5%)** | **23(29.5%)** | **78(100%)** |
| **TOTAL** | **133(67.9%)** | **63(32.1%)** | **196(100%)** |

X2=.562,p=.755(not significant)

**Discussion**

Study sample comprised of 196 dental students (70 boys and 126 girls) with response rate 89.9% with mean age of 22.4 years. Among them 50(25.5%) were 3rd year students, 68 (34.7%) were 4th year students and 78 (39.8%) were Interns. In the present study the prevalence of NSIs was 87(44.4%), which is differing from the study coded by Khurram Siddique et.al (2008 ) 6 showed prevalence of NSIs is 94%.

Number of times exposed to NSIs are 23(11.7%) once, 18(9.2%) twice and 35(17.9%) more than twice and 11 (5.6%) don’t remember. Majority of them experiences to NSIs are interns and least experienced are III BDS students, which is not similar to the study conducted by M Hashemipour et.al( 2008)7 showed number of times exposed to NSIs are 25.8% once, 39.6% twice and 17% more than twice.

Common cause for needle stick injuries are careless attitude 96(49%), due to stress 71(36.2%) and over burden 29(14.8%), stress and over burden seen commonly among interns and careless attitude among final BDS students and followed by 3rd BDS students, which is in contrast to the study conducted by Afia Zafar et.al (2008)8 over burden 41%, followed by carelessness 38%.

84(42.9%) told that they clean the injured area with spirit swab, 65(33.2%) told that wash the injured area with soap and water and 20(10.2%) have told that allow injury to bleed, but a study conducted by Iram Manzoor et.al (2010)9 and Sumathi Muralidhar et.al (2010)10 showed that 92.2% & 47% clean injured area with spirit, 87% & 66% wash the injured area with soap and water respectively.

72(36.7%) told that NSIs occur while giving injection, followed by 58(29.6%) for recapping needle, 30(15.3%) during bending needles by hand, 31(15.8%) suturing and least by restorative instruments, which is similar to the study conducted by Mungure EK et.al(2011)11. 163(83.2%) have told that they recap needle after injection, which is high when compared to study conducted by M Hashemipour et.al (2008)7 only 48.2% recap needles after use.

Majority of study subjects use single hand technique 114(58.2%) and seen more among interns and IV BDS students are 47(41.2%) and 44(38.6%) respectively. III BDS use both hands 22(44.9%) to recap the needle, where as study done by Sumathi Muralidhar et.al(2010)10 reported that 59% use both hands.

79(40.3%) study subjects throw the syringes in garbage, 53(27%) place the syringes in sharp container, 49(25%) use needle destroyer, 15(7.7%) leave it on the working area.

84(42.9%) have told that they are aware of universal precautions, of which 42(53.8%) are interns and study conducted by Gurubacharya DL et.al (2003)12 and Khurram Siddique et.al (2008)6 showed 66% and 21.6% respectively. 159(81.1%) told that diseases transmitted by NSIs are HIV, Hepatitis B and C. In the present study only 133 (67.9%) were vaccinated against Hepatitis B (HBV) and in a study conducted by Khurram Siddique et.al (2008)6 showed 82.7% were vaccinated against hepatitis B.

**Limitations :**

* This study might give a chance for the occurrence of recall bias, because the findings may be underestimated since it relied on the respondent memory.
* Its conveniently selected small sample size, but the information revealed is alarming as the frequency of NSIs is high amongst dental students.

**Conclusion**

Despite knowing the risks, frequency of needle stick injury was observed among participants reflecting bad practice and careless attitude towards work. Although exposure to HBV poses a high risk for infection, administration of pre exposure vaccination or post exposure prophylaxis can dramatically reduce this risk. Such is not the case with HCV and HIV. So preventing the NSIs is the best approach to preventing these diseases.

**References:**

1. Needlestick injury. Available at URL:http://en.Wikipedia.org/wiki/needlestick-injury. Accessed on 19th AUG.2014.
2. M.AL-Dabbas and N.M.E.Abu-Rmeileh. Needlestick injury among interns and medical students in the occupied Palestinian Territory. EMHJ.2012;Vol.18, no.7.
3. Y. Khader, S. Burgan and Z. Amarin. Self- reported needle-stick injuries among dentists in North Jordan. Eastern Mediterranean Health journal. 2009;vol 15, no 1.
4. Callan RS, Caughman F, Budd ML. Injury reports in a dental school: A two-year overview. J Dent Educ.2006;70:1089–97.
5. Ramos-Gomez F, Ellison J, Greenspan D, Bird W, Lowe S, Gerberding JL. Accidental exposures to blood and body fluids among health care workers in dental teaching clinics: A prospective study. J Am Dent Assoc. 1997;128:1253–61.
6. Khurram Siddique et.al. knowledge attitude and practices regarding needle stick injuries amongst healthcare providers. Pakistan journal of surgery 2008; vol 24, issue 4 :243-248.
7. M Hashemipour, A Sadeghi. Needle stick injuries among medical and dental students at the university of kerman. A questionnaire study. J of dentistry, 2008; vol: 5, 71-76.
8. Afia zafar et al. knowledge, attitude and practices of health care workers regarding needle stick injuries at a tertiary care hospital in pakistan. J pak med assoc 2008; vol 58, no.2.
9. Iram Manzoor et.al. Neeedle stick injuries at a tertiary health care facility. J Ayub Med Coll Abbottabad 2010; 22(3).
10. Sumathi Muralidhar et.al. Needle stick injuries among health care workers in a tertiary care hospital in India. Indian J Med Res 2010; 405-410.
11. Mungure EK et.al. Awareness and experience of needle stick injuries among dental students at the university of Nairobi, dental hospital.
12. Gurubacharya DL, KC Mathura, Karki DB. Knowledge, attitude and practices among health care workers on needle stick injuries. Kathmandu university medical journal 2003. vol.1, no.2, 91-94.