

Original Research Article

Knowledge and Experience of Needle Stick Injuries among Male and Female Dental Students of a Dental School in Riyadh, KSA.

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Introduction: The dental students need to attain maximum knowledge regarding the needle stick injuries, their risks and methods of management. They spend an ample time in their clinics getting them exposed to needles during various dental procedures.

Materials and Methods: This study was conducted in Riyadh Colleges of Dentistry and Pharmacy, Riyadh, KSA. It involved 108 male and 118 female students studying in levels 10, 11, 12 and interns as well. **Results:** The response rate for males was 83% and females 90%. Total number of participants was n= 226. In a question related to the action following the use of injections, 91.2% responded with stating that they re-cap their injections after use, whereas 8.4% responded that they do not re-cap their injections after use.

Conclusion: Knowledge of needle sticks injuries seem to be adequate among the dental students.

Keywords: Needle stick injury, Sharps injury, Dental students.

INTRODUCTION

Dental students are exposed to clinical dentistry as early as the 3rd year of their bachelor studies. This study is designed to determine the knowledge and experience regarding needle stick injuries among dental students of Riyadh Colleges of Dentistry and Pharmacy. We have aimed to compare the extent of knowledge between male and female students currently studying in levels 10, 11 and 12 along with the interns.

These students are constantly at risk of having a needle stick injury which may be associated with the spread of various infectious diseases such as Hep B, C, and HIV (deVries and Cossart, 1994). It is very important to create awareness about prevention from needle stick injuries right from the dental school. Proper management of needle injuries should be taught to these undergraduate students as they are expected to complete their clinical requirements within the bachelor level. Prevention is always the best option when it comes to needle stick injuries (Smith, Cameron, Bagg and Kennedy, 2001)

The dental students need to attain maximum knowledge regarding the needle stick injuries, their risks and methods of management. They spend an ample time in their clinics getting them exposed to needles during various dental procedures. It is essential to identify the important causes of needle injuries among these students so that this matter could be addressed

and students could be trained in order to reduce the number of needle pricks as much as they can (Askerian & Malekmakan, 2006)

Another serious issue regarding the needle injuries is the behavior of dental students when they do not report such incidents to their supervisors or management. This point is included in their education and training related to the prevention and management of needle injuries. Furthermore, a strong emphasis should be given to the use of occupational health and safety document related to this matter. Exposure to these documents in the clinical setup will definitely reduce the incidence of needle injury and incase the injury happens, students will have the knowledge required in order to manage such situations (Wang et al. 2003).

A needle stick damage (NSI) is characterized as an unplanned skin-infiltrating cut injury from an empty bore needle (or any sharp) containing someone else's blood or body liquid. Sharps damage (SI) is characterized as a skin-infiltrating cut injury caused by sharp instruments and mischances in a therapeutic setting (Mehrdad & Leila, 2006).

As per the World Health Report 2002, out of 35 million medicinal services laborers (HCWs), 2 million experience percutaneous introduction to irresistible maladies every year. It additionally noticed that 37.6% of hepatitis B, 39% of hepatitis C, and 4.4% of Human Immunodeficiency Virus (HIV)/AIDS

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among HCWs around the globe are because of NSIs. Comprehensively, NSIs are the most widely recognized wellspring of ward-related introduction to blood and the essential driver of blood-borne diseases of HCWs. In India, around 3 - 6 billion infusions are given for each year, of which two-third infusions are dangerous (62.9%), and the utilization of glass syringe is always connected with a higher level of riskiness (Maqbool et al., 2002).

The standard utilization of sharp instruments in dental treatment, the nearness of blood and spit, and the assorted bacterial greenery in the oral cavity all add to the perilous idea of the dental working environment for blood-borne contaminations. Anticipating NSIs is a test looked in for all intents and purposes each medicinal work put. In a dental domain, the weight of NSIs and SIs can be lessened when a dental expert complies with the current and all around acknowledged standard careful steps against NSIs. Each medicinal services office ought to have a disease control program set up through a working healing facility contamination control panel (Mohamed, 2016).

There are no solid reconnaissance information with respect to word related introduction in our nation. The foundation of a powerful contamination control program requires data on word related presentation and pervasiveness of the ailment and the elements identified with it. Such reconnaissance information is fundamental for creating and amending contamination control approaches and strategies (Jurimoni et al, 2016).

Needle stick wounds (NSI) has dependably been a standout amongst the most imperative hazard factor for medicinal services laborers (HCWs) for transmission of different contaminations, for example, hepatitis B, hepatitis C, and human immunodeficiency infection (HIV). According to the 2008-2009 HIV gauges, there are an expected 23.9 lakh individuals as of now living with HIV/AIDS in India with a grown-up commonness of 0.31% out of 2009. Assortment of strategies like needle recapping, wounds maintained in the working room, blood gathering or intravenous line organization, suturing and checking glucose can prompt inadvertent NSI.

The likelihood of transmission differs relying upon whether the presentation is with an empty bore needle or a strong needle because of higher liquid substance and pathogen stack. Albeit current dentistry has been referred to as the minimum perilous of the every one of the occupations, dangers like NSI still test the status of this occupation. Contrasted with numerous other medicinal services settings, dental experts are at higher danger of procuring contaminations because of the way that dental specialists work in a constrained access and confined perceivability field and much of the time utilize sharp gadgets (Aradhana et al, 2013).

Consistently, around 16 billion infusions are controlled in creating and transitional countries and roughly 3 million people are harmed because of needle stick and sharp wounds. These sorts of blood-borne exposures can be profession and life-finishing. There is gross under revealing of NSI and, in this manner, the frequency of NSI is higher than the present appraisals. As indicated by late gauges, around 10,00,000 HCWs in US and 1,00,000 HCWs in UK get NSI from regular needles and sharps consistently.

It was likewise discovered that the utilization of glass syringe was continually connected with higher level of unsafety. In creating nations like Ghana, Indonesia and Uganda, 80-90% of patients who went by a wellbeing focus got at least one infusions for every visit. A positive relationship has been accounted for between the recurrence of infusions and the predominance of blood-borne diseases in the populace. Another examination detailed a high occurrence of needle stick

and sharp wounds among HCWs in Jordan. In South Africa, 91% of junior specialists announced maintaining a NSI in the earlier year. Aftereffects of another cross-sectional investigation directed in Iran among therapeutic and dental understudies demonstrated that 74.3% had encountered NSIs, and the most noteworthy occurrence among the dental understudies was found in Endodontics, Surgery and Periodontics Departments. As indicated by another investigation directed in a Dental Institute in London, it was discovered that oral surgery facilities were the real wellspring of revealing of NSIs contrasted and other particular dental centers inside the establishment (Sharma et al, 2010).

Needle stick wounds will be wounds caused by needles that coincidentally cut the skin. Mishaps with needles are a standout amongst the most widely recognized sorts of damage in the medicinal services setting. Dental practitioners and also other dental workforce are always presented to various particular work related perils. They cause the presence of different infirmities, particular to the calling, which create and heighten with years. Needle stick damage is the premier reason for the spread of cross-diseases. Introduction to blood-borne pathogens because of needle stick wounds specifically is a potential hazard for human services laborers, including dental specialist, dental understudies and dental staff. Needle stick wounds are a danger for individuals who work with hypodermic syringes and other needle gear. These wounds can happen whenever when individuals utilize, dismantle or discard needles (Asad, Ameet & Raza, 2013).

Dental specialists and dental understudies are presented to blood and other body liquids over the span of their work. Thusly, they are in danger of contamination with blood-borne infections including human immunodeficiency infection (HIV), hepatitis B infection (HBV) and hepatitis C infection (HCV). The danger of contamination for dental specialists relies upon the predominance of ailment in the patient populace, nature, and recurrence of exposures. While utilizing needles and sharp instruments, wounds can occur for different reasons. Damage can happen when playing out a methodology on a patient with a sharp instrument when there is a startling development by the patient or work partner, or a transient absence of fixation. Re-sheathing a utilized needle is a typical reason for needle stick wounds. Despite the fact that a medicinal services specialist may have rehashed the method commonly, one slip can cause damage with possibly genuine outcomes (Singh, Paudel & KC, 2017).

Deficient staff, absence of experience, lacking preparing, obligation over-burden and weakness may prompt ward-related sharp wounds. It is assessed that around 600,000 to 800,000 needle stick wounds happen every year among human services laborers in the United States. The greater parts of these wounds are not revealed (Kebede, Molla & Sharma, 2012).

MATERIAL AND METHODS

A closed-ended questionnaire was used to assess the knowledge and attitude of dental students towards needle stick injuries. This study was conducted in Riyadh Colleges of Dentistry and Pharmacy, Riyadh, KSA. It involved 108 male and 118 female students studying in levels 10, 11, 12 and interns as well. Data collection was completed in one month time and all the data was subjected to statistical analysis using SPSS v.21.

RESULTS

Data was collected from 108 male and 118 female dental students from senior levels of their dental studies. Questionnaires were distributed to 130 male and 130 female students and interns. The response rate for males was 83% and females 90%. A total number of participants was $n=226$. The percentage distribution of all the students studying in different levels is described in table 1. In a question related to the action following the use of injections, 91.2% responded with stating that they re-cap their injections after use, whereas 8.4% responded that they do not re-cap their injections after use.

When inquired about the usage and disposing of the sharp's box, 23% responded that they wait till the box is half full, 27% waited till the box is $\frac{3}{4}$ full and 15% would wait till the box was completely full. 26.5% reported that they have experienced a needle stick injury at least once during their clinical training; whereas 73.1% did not experience any injury at all. When inquired about the frequency of needle injuries, 48.3% had experienced one injury in the past 12 months, 39.7% had two and 5.2% suffered 3 needle stick injuries.

Most important aspect of our research was to inquire about the causes of needle stick injuries. When asked about the causes, 64% stated that they were in a hurry while using injections. 12% linked the injury to fatigue, while 20% related their injury to having not enough assistance. When inquired about the follow-up action after the injury, 31% stated that they informed their clinics' supervisor after the injury, whereas 32% did not inform anyone.

DISCUSSION

Needle stick injuries have a high incidence rate among dentists. Although the chance of getting an injury may reduce with more experience gained in clinics. Dental students of RCsDP start their clinical training in their 4th year of dentistry. Although the curriculum includes the precautionary measures needed by the students in order to prevent them from getting needle injury, but their exposure to needles in clinics is the time which should be taken care of. The aim of this study was to evaluate the knowledge of dental students regarding the actions taken when experienced a needle injury, along with the possible hazards that may occur as a result of needle stick injury.

More than a quarter of participating dental students had the experience of at least one needle injury during the past 12 months as a result of fatigue, less clinical experience, less clinical assistance etc. Another important aspect of this study was to determine the mode of action following any needle injury. It was encouraging to know that a good percentage of dental students reported their injuries to the clinic's supervisor and infection control personnel. On the other side, some students did not report their injuries to anyone, which raise some concern as they should be educated more regarding this important issue.

There is a huge scope of improvement in this research as we may expand our target population to other institutions of Riyadh as well as other cities to get much enhanced and detailed results, which could be useful in amending the current policies regarding this issue when it comes to dental students.

In a similar study which was carried out, HCWs confront a perceived danger of ward-related presentation to blood-borne infections, for example, the HIV, the hepatitis B infection (HBV), and the hepatitis C infection (HCV). Dental experts are one among the HCWs. In the present investigation, 88% of the

dental experts thought about hepatitis B, hepatitis C, and HIV to be transmitted by NSIs. It was as per the examination led by Saini, Guruprasad et al. The investigation of dental experts in the present examination shows that they have moderately great level of information about the illnesses transmitted through NSIs and SIs. This was rather than an investigation directed by Alam, which revealed that 21% and 30% of HCWs (attendants and paramedical staff) were ignorant of the way that AIDS and hepatitis C can be transmitted by NSIs, individually (Marcus et al., 1989).

In another examination, 79% respondents considered the damage caused while utilizing the majority of the instruments (hand, revolving, surgical, hypodermic needles, suture needles, and lancets) constituted NSIs and SIs and 7% considered hypodermic needles, suture needles, and lancets to constitute NSIs and SIs. In an investigation directed by Saini et al., 28% of the dental understudies detailed that hypodermic needles had the most noteworthy hazard for NSIs. In this manner, it demonstrates that dental experts in the present examination had a superior information (Ruthanne et al, 1988).

In an investigation, 47.50% of dental experts knew about the security gadgets used to forestall NSIs. This was like the investigations directed by Alam and Malik et al. in which the members knew about the new needle gadgets and their security highlights. Be that as it may, when contrasted with thinks about by Jaber (93.5% of the dental UG understudies), the information of the dental experts in the present examination in regards to wellbeing gadgets to counteract NSIs was poor (Vanesh et al, 2011).

In another examination, 81% of the dental experts announced that they would first contact a medicinal crisis room if there should arise an occurrence of an unplanned NSI and 1.5% would not contact anybody if there should arise an occurrence of NSIs. Past examinations of dental practitioners announced that 40.4% of them would answer to the concerned specialists and 59.6% would not answer to anybody with respect to NSIs. Salekar et al. discovered that lone 32% of HCWs revealed the NSIs to the concerned unrivaled. It has been seen that the members of the present investigation had an uplifting mentality toward answering to the concerned experts in regards to NSIs if in the event that one happens. This might be because of the great mindfulness about the blood-borne ailments that could be spread through these wounds (Yadavalli & Dinesh Singh, 2011).

The reasons detailed that kept the dental experts to report NSIs were that 8% of the dental experts thought he/she may cause reprimanded or get harm for having a NSI and 2% thought it was not vital to report. Like our investigation, 37% of the dental UG understudies did not report as a result of the dread of belittling and separation, 28% did not report in light of the fact that the thing was unused, 15.6% did not know how to report, 12.4% idea it was just minor damage, and 6.7% of the understudies were excessively humiliated, making it impossible to report it.

Jan et al. expressed that 33.1% of dental practitioners did not report as there was no utilization to report a NSI, 27.1% did not know where to report or did not have any desire to report, 19.3% expressed that the needle was new subsequently there was no compelling reason to report, 9% did not inspire time to report, 6% neglected to report, and 5.5% idea nothing will happen in the event that they don't report. Therefore, our investigation proposes that detailing of NSIs and SIs must be reinforced among the dental experts through upgraded training programs directed consistently. These results were obtained from a similar study (Singh, Paudel & KC, 2017).

Table 1: Distribution of participants

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	108	47.8	47.8	47.8
	female	118	52.2	52.2	100.0
	Total	226	100.0	100.0	

Table 2: Actions during the use of injection

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	cover the needle first	186	82.3	82.3	82.3
	do not cover the needle	8	3.5	3.5	85.8
	never separate	9	4.0	4.0	89.8
	forceps/tweezers	23	10.2	10.2	100.0
	Total	226	100.0	100.0	

Table 3: Disposal of sharps box

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1/2 full	52	23.0	26.3	26.3
	2/3 full	51	22.6	25.8	52.0
	3/4 full	61	27.0	30.8	82.8
	completly full	34	15.0	17.2	100.0
	Total	198	87.6	100.0	
Missing	System	28	12.4		
Total		226	100.0		

Table 4: Percentage of participants experiencing needle stick injuries in past 12 months

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	60	26.5	26.7	26.7
	No	165	73.0	73.3	100.0
	Total	225	99.6	100.0	
Total		226	100.0		

Table 5: Number of injuries experienced by the participants

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	28	12.4	48.3	48.3
	2	23	10.2	39.7	87.9
	3	3	1.3	5.2	93.1
	more than 3	4	1.8	6.9	100.0
	Total	58	25.7	100.0	
Total		226	100.0		

Under the Occupation Safety and Health Administration (OSHA) Guidelines, recapping of needles has been entirely precluded. The present investigation assessed 41.81% of dental experts had damage amid recapping of the gadget and 5.45% amid gadget transfer. It was, for the most part the postgraduate dental understudies (43.5%) who had damage amid gadget recapping. Past examinations found that recapping a needle was the most vital reason for NSIs among dental specialists. This might be ascribed to the workload and exhaustion among the members in the present examination (Afridi, Kumar & Sayani, 2013).

The comparable examination found that 54.5% of the dental experts rehearsed transfer of needles through needle burner and syringe destroyer, 21% utilized needle shaper, 14% utilized cut safe fixed compartment, and 10.5% utilized needle incinerator. An investigation by Guruprasad et al. noticed that 44% would crush the needle utilizing needle destroyer and 15% would devastate utilizing cut safe compartment with a disinfectant. Another investigation by Prabhu et al. discovered that 30.39% of the dental medical caretakers arrange needles in a cut verification fixed box and 2.94% arrange needles utilizing needle shaper (Vaz et al, 2010).

In correlation with various gatherings, it was accounted for in one of the investigations that postgraduate understudies had great mindfulness, yet alarmingly they likewise detailed higher number of wounds. This could be because of the way that postgraduate understudies have more clinical load when contrasted with the college understudies and consequently are by and large at higher danger of such risks. Just 31% of the third year dental understudies were supportive of washing the injury with cleanser and pursuing water incidental damage in one examination when contrasted with 80% in another investigation reports (Priyamvada et al, 2017).

Two of the investigations did not say the time of the examination course in which the understudies were selected, as this can significantly affect the learning and mindfulness level of the understudies and might be a wellspring of potential inclination when the outcomes are translated. A self-revealed poll was utilized for social affair data from the understudies with respect to NSI. This can expand the danger of inclination while assessing contemplates on learning and mindfulness (Tenner et al, 2012).

Aeeza Malik et al ponder from Nepal revealed 74% needle stick damage among dental specialists and staff, while in an examination led in Iran it was 39.4%.¹³ Many scientists have dissected needle stick wounds among social insurance experts and not just on general dental professionals. Their outcomes outlined that 74% of members think about safeguards concerning needle stick injuries.

Aslam M et al demonstrated that 34% of members with needle stick damage were presented to needles that were polluted with liquid of hepatitis B or C patients, which is disturbing in light of the fact that it has been watched that a substantial number of hepatitis contamination happen because of needle stick damage. In our investigation, it has been watched that 82% members were given directions related with the danger of blood-borne contaminations in their clinical preparing. Be that as it may, 93% of members have the information about immunization and 73% were certain that inoculation would shield them from viral hepatitis (MA Makaray, 2008).

In an investigation of Muralidhar et al uncovered that 74% of social insurance laborers were utilizing gloves during a period of needle stick damage, a figure which missed the mark concerning the figures appeared by Askarian et al (96.2%) in Iran.⁸ However, in our examination, 38.5% of the members

concurred that gloves diminish the likelihood of needle stick damage whereas 43.5% of the members didn't know about it.

CONCLUSION

Knowledge of needle sticks injuries seems to be adequate among dental students.

CONFLICTS OF INTEREST

There is no conflict of interest among the authors or any person or organization with the publication of this research.

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