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Research Article

**FREQUENCY OF SHARP INJURIES DURING WORKING
HOURS AMONG PARAMEDICAL STAFF OF DHQ
HOSPITAL, GUJRANWALA**¹Dr. Mehak Adil, ²Dr. Sobia Ali, ³Dr. Sobia Badar¹House Officer DHQ/UTH Gujranwala²Lahore General Hospital Lahore³WMO DHQ Jauharabad**Abstract:**

Introduction: Accidental exposure to blood and body fluids is frequent among health care workers. Over 20 million dedicated health care providers expose themselves to biological, chemical, and mechanical hazards daily. Sharp injuries are one of the most serious occupational accidents. According to various studies done, female staff nurses are the most vulnerable to sharp injuries. It is clear that serious consequence of sharp injuries can be markedly reduced by increasing awareness of safety protocols. So, in this context, we will be carrying out this study to assess the frequency, knowledge and attitude among paramedics regarding sharp injuries.

Objectives: To determine the frequency of Sharp injuries among paramedical staff, to identify factors associated with Sharp injuries, to develop awareness & prevention of Sharp injuries.

Study Design and Area: Descriptive cross-sectional study was conducted in DHQ hospital Gujranwala.

Study Duration: 1 month.

Materials and Methodology: 50 paramedics were included in our study; all were interviewed by pre formed questionnaire according to our objectives.

Results: According to our survey, 24(48%) paramedics who got injured were males and 26(52%) were females; female ratio is 4% more than males. 46% respondents were of age between 15-25 and most of injuries occurred due to patients overload and carelessness. 48% of paramedics were staff nurses working in medical emergency and wards. 24(48%) of paramedics injured more than two times, 18(36%) injured once and 8(16%) injured once in their working hours. 96% of injuries occurred at hands/forearms while 4% at other parts of body. 60% of the injuring instruments were sterilized and 40% were unsterilized. 42% injuries occurred during giving injections, 22% while disposing of instruments, 18% while taking samples and 18% during assisting operations. 58% were not aware of the immune status of their patients. 60% of our respondents are vaccinated. After injury 48% allow wound to bleed, 30% wash with antiseptic, 16% wash with water and 14% pressed the wound site to forcefully bleed the wound.

Conclusion: Female staff nurses of less than 25 year age group are the most vulnerable to sharp injuries. Most of the injuries occurred while using injection syringes and during patients overload.

Keywords: Female staff nurses; Sharp injuries; Injection syringes; Time of patient overload

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INTRODUCTION:

Sharp injury is defined as “A cut, stab, or incision with skin penetration, which reflects patterns or characteristics consistent with the wounding object” (i.e. scalpel blade, trocar, IV equipment, sutures needles and hollow bore needles) [1]. But for surgical personals and for preoperative nurses, sutures needles are most common equipment that causes injuries. A Paramedic is defined as “A person who is trained to give emergency medical treatment or assist medical professionals” [2]. Sharp injuries are the most common health care workers issue. These injuries are occupational hazard in medical community and area potential source of life threatening infections. Some infectious diseases have no available vaccination or complete treatment, so blood-borne infections are a major cause of anxiety for health care workers (HCW).

Researches on prevalence of sharp injuries have been conducted in various countries previously. These studies have shown that 52.4% injuries occurred during preparation, 20% during use, 17.6% after using of the device, 4.8% while disposing of the device and 5.2% during washing equipment and carrying them to other places [3]. While a research done in Pakistan shows that 77% of HCWs had sharp injuries, the highest number of (41.6%) reported at Patient room/Ward, (15.6%) injuries reported at Emergency Department, (9.10%), at Intensive Care/Critical Unit, (33.80%) [4]. Another study shows 40.3% injuries occurred during use of needle, 7.8% during disassembling device or equipment, 2.6% in preparation for reuse of reusable instruments, 19.5% while recapping a used needle, 9.1% while withdrawing a needle from rubber or other resistance, 3.9% after use and before disposal, 1.3% while putting the item into the disposal container, 5.2% due to restraining patient, 2.6% due to the device left on floor, table, bed or other inappropriate place, 2.6% due to pressure of work and 5.2% due to collision with other person [5]. Another study reported an important finding that a majority of the injuries occurred not during use itself, but rather during the handling between use and its disposal [6].

The frequency of sharp injuries and related deadly blood-borne diseases among paramedics is increasing. This is due to lack of knowledge and awareness of safety protocols. As medical community, it is our main concern to initiate efforts to prevent and limit such exposures and its consequences among paramedics. According to World Health Organization (WHO) regional classification, Pakistan comes in Eastern Mediterranean Region D. Unfortunately this region has the highest rate of needle stick injuries as compared to the entire world [7]. So, in this

context, we will be carrying out this study to see the latest frequency of sharp injuries among paramedics as well as their general awareness in this regard, in D.H.Q hospital, Gujranwala. The aim of our study is to assess the frequency, knowledge and attitude among paramedics regarding sharp injuries. So a standard protocol regarding training as well as adopting preventive measures would be implemented to prevent further health hazards.

Objectives:

1. To determine the frequency of Sharp injuries among paramedical staff.
2. To identify factors associated with Sharp injuries.
3. To develop awareness & prevention of Sharp injuries.

Literature Review:

It is estimated that the health care workforce (HCW) of 35 million people worldwide represents 12% of the working population. Health care workers; nurses, theater attendant, paramedics and laboratory technicians, are especially exposed to injury by sharp instruments in the course of their duty. The most often performed procedures with risk of injury are: intramuscular or subcutaneous injection, taking blood samples, or during the intravenous cannulation, replacing the cap on an already used needle. The probability of needle stick injuries (NSI) and other injuries by sharp instruments among new health personnel or health care students is much higher in comparison to experienced ones.

According to World Health Organization (WHO) regional classification, Pakistan comes in Eastern Mediterranean Region D. Unfortunately this region has the highest rate of needle stick injuries as compared to the entire world [7]. A huge number of researches have already been conducted all over the world some of which merit special reference here. According to the international statistics, a recent study reported that, large percentage (79.5%) of HCWs had one or more sharp injuries in their career at Delhi (India) [8].

In Taiwan, a research was done according to which nursing students appear to be at highest risk of percutaneous injuries, with a study showing an incidence rate of 61.9% during student nurse internship [9].

Goniewicz M, Włoszczak-Szubzda conduct a research which relate the incidence of injury during various procedures as follows: intramuscular or subcutaneous injection (22%), taking blood samples or during intravenous cannulation (20%),

replacing of the cap on an already used needle (30%) [11].

Unfortunately Pakistan is one of those countries that has highest prevalence of sharp injuries. Ameet Kumar, Ali Khan Khuwaja, Amin Muhammad Khuwaja conduct a research for Ayyub medical College, Abbottabad which showed that the majority of the study participants were females practicing in medical units (62%) [10].

In Karachi, also a research was done according to this nursing students appear to be at highest risk of sharp injuries. 77% had NSI, the highest number of NSIs (41.6%), reported at Patient room/Ward, (15.6%) NSIs reported at Emergency Department, (9.10%) at Intensive Care/Critical Unit and (33.80%) NSIs reported at Operating Room/ Recovery [4].

Another research conducted at Agha Khan University Hospital Karachi which shows that the most common reason identified for NSI among both doctors and nurses was stress/being overburdened (41%) followed by carelessness (38%). The majority of the injuries occurred while injecting or drawing blood samples (53%) followed by surgery and suturing (17%) and recapping syringes (11%) [12].

As far as the level of awareness and training of paramedics is concerned, according to a study carried in Pakistan at least 86% of the HCWs were aware of sharp injuries prevention protocols

and 84% of participants said that they use yellow box specified for sharp disposal [13].

MATERIALS AND METHODS:

- **Study design:**
- It was of descriptive cross sectional design.
- **Study area:**
- It was carried out in DHQ hospital Gujranwala.
- **Study duration:**
- 1 month.
- **Study subjects:**
- Paramedical staff of DHQ HOSPITAL Gujranwala.
- **Sample Size:**
- Sample was collected by EPI-Info software. Sample of 50 people was taken
- **Data Collection:**
- Data was collected by preformed structured questionnaire.
- **Sample Technique:**
- Non probability convenience sampling.
- **Data Analysis:**
- Data was analyzed through SPSS and we made frequency tables and bar charts.

RESULTS:

50 completed questionnaires were included in this statistical analysis for the study. Although we approach 67 individuals to participate, 4 of which did not responded well, 3 were busy in their work. Remaining 50 respondents participate well and willingly answered all the questions so their data was analyzed to report the following conclusions.

Table 1: Frequency distribution of paramedics according to Age

		Frequency	Percent
Valid	15-25	23	46.0
	26-35	16	32.0
	36-45	11	22.0
	Total	50	100.0

Out of 50, 23(46%) paramedics were up to 25 years old, 16(32%) were up to 35 years old and remaining 11(22%) were ranged between 36-45 years.

Table 2: Frequency distribution of paramedics according to Gender

		Frequency	Percent
Valid	Male	24	48.0
	Female	26	52.0
	Total	50	100.0

24(48%) paramedics who got injured were males and 26(52%) were females; female ratio was 4% more than males.

Table 3: Frequency distribution of paramedics according to Occupation

		Frequency	Percent
Valid	Staff nurse	24	48.0
	Theater attendant	10	20.0
	Lab attendant	8	16.0
	Dispenser	8	16.0
	Total	50	100.0

48% of injured paramedics were staff nurses working in medical emergency and wards, 20% were theater attendants and the percentage of both the injured lab attendants and dispensers were 16%.

Table 4: Frequency distribution of paramedics according to Occurrence of Injury

		Frequency	Percent
Valid	Yes	50	100.0

50(100%) out of 50 respondents got sharp injury or pricks once in their working hours.

Table 5: Frequency distribution of paramedics according to Frequency of Injury

		Frequency	Percent
Valid	Once	18	36.0
	Twice	8	16.0
	Many times	24	48.0
	Total	50	100.0

24(48%) of paramedics injured more than two times, 18(36%) injured once and 8(16%) injured once in their working hours.

Table 6: Frequency distribution of paramedics according to Cause of Injury

		Frequency	Percent
Valid	Anxiety	24	48.0
	Beginner	9	18.0
	Carelessness	17	34.0
	Total	50	100.0

Anxiety due to patient overload was the cause of injury in 48% respondents, 18% who got injury were beginner and 34 % got injured due to their carelessness.

Table 7: Frequency distribution of paramedics according to Site of Injury

		Frequency	Percent
Valid	Hands/forearm	48	96.0
	Any other part	2	4.0
	Total	50	100.0

96% of injuries occurred at hands/forearms of our respondents while 4% injuries occurred at other parts of body.

Table 8: Frequency distribution of paramedics according to Sterilization of instrument

		Frequency	Percent
Valid	Yes	30	60.0
	No	20	40.0
	Total	50	100.0

In 60% of cases the injuring instruments were sterilized and in 40% cases injuring instruments were unsterilized.

Table 9: Frequency distribution of paramedics according to Activity during injury

		Frequency	Percent
Valid	Assisting operation	9	18.0
	Injections	21	42.0
	Taking samples	9	18.0
	Disposing instruments	11	22.0
	Total	50	100.0

42% injuries occurred during giving injections, 22% while disposing of instruments, 18% while taking samples and remaining 18% during assisting operations.

Table 10: Frequency distribution of paramedics according to their knowledge about Screening of patients

		Frequency	Percent
Valid	Yes	21	42.0
	No	29	58.0
	Total	50	100.0

58% respondents were not aware of the immune status of their patients and 42% were aware of the immune status of their patients.

Table 11: Frequency distribution of paramedics according to their vaccination status

		Frequency	Percent
Valid	Yes	30	60.0
	No	20	40.0
	Total	50	100.0

60% of our respondents were vaccinated and remaining 40% were not vaccinated against Hepatitis B.

Table 12: Frequency distribution of paramedics according to Management of Injury

		Frequency	Percent
Valid	Allow wound to bleed	20	40.0
	Pressing pricked site	7	14.0
	Washing wound with water	8	16.0
	Washing wound with antiseptic	15	30.0
	Total	50	100.0

After injury 48% respondents allowed wound to bleed, 30% washed with antiseptic, 16% washed with water and remaining 14% pressed the wound site to forcefully bleed the wound.

DISCUSSION:

The frequency of sharp injuries was assessed among paramedics in D.H.Q hospital of Gujranwala using a self-administered questionnaire. Our study showed that frequency of injuries is considerably higher among subjects between 15-25 years of age (46%) whereas it is (32%) in the next age group 26-35 years [Table 1]. This finding contradicts with the findings of International Journal of Health showing 8.7% and 75.9% frequency in same age groups respectively¹⁴. Variation in injury frequency on gender basis is also seen i.e. 48% males got injured in correspondence to 52% of females [Table2]. This finding is in coherence with the previous studies in Pakistan [14].

Among all the paramedic staff, nurses were reported to be most commonly affected^{4,5,14}. In our study 48% of subjects were staff nurses [Table 3]. Most of the subjects were injured many times (48%) [Table5] in contrast to only 15% in previous researches^{4,5}. Regarding cause, most of the paramedics declare anxiety as a major cause of the injury [8]. Similar facts were observed in our study [Table 6].

Regarding site of injury, both hands and forearm are mainly involved^{4,5}. In our study, 96% of subjects got injured on hands/forearm and only 4% received injury on any other site [Table7]. In contrast to the results of previous researches, most of the injury instruments were sterilized i.e. 60% [Table8] which was 35.10% in last years^{4,5}. During study, we also found that 42% of injuries occur during administering injections, 22% during disposing instruments and only 18% during assisting operations [Table 9]. This finding was in coherence with the results from previous researches in Pakistan and internationally^{4,5}. When asked about the knowhow of screening status of patient, 58% of the subjects said that they were unaware of patients screening status [Table 10] against infections like hepatitis C and HIV.

However, as far as their own immunization is concerned, 60% of the study subjects were immunized.

As far as the management of injury is concerned, our studies reported that 40% of the study population do nothing and let the wound bleed followed by injury by the sharp object. 30% wash the wound with antiseptic, 16% wash the wound with water and 14% simply apply pressure on the pricked site. When compared with an international study, 14.8% of study subjects let the wound bleed, 10.5% wash the wound with antiseptic and 8.6% wash the wound with simple water, rest of the figures involved insignificant combinations [8].

CONCLUSION:

It was concluded that:

1. 48% of respondents were staff nurses of 15-25 year age group working in medical emergency and wards were the most vulnerable to sharp injuries.
2. 60% of the injuries occurred while using injection syringes and during patients overload.
3. 58% of respondents were not aware of the immune status of their patients.
4. 60% of respondents were vaccinated against hepatitis B.
5. After injury generally 54% of respondents allowed wound to bleed or applied force to bleed.

Recommendations:

The training of paramedics and regular monitoring of safety practices indispensably needs to be an ongoing activity at the hospital.

1. Female staff nurses of 25 years age should be specially trained about sharp injuries.
2. All the paramedics should wear gloves especially during dealing with syringes.
3. Government should increase the number of paramedics in each department to cope with patients over burden.

4. Vaccination program should be mandatory for every employee of DHQ HOSPITAL Gujranwala.
5. Increased compliance with Universal Precautions.
6. After Injury wound must be washed with plenty of antiseptic.
7. Post-exposure prophylaxis and follow-up facility should be provided by hospital management.
8. Infectious control training and teaching should be an integral part of the curriculum of all disciplines including medical, dental, nursing, and paramedics.

Limitations:

1. Short duration of study.
2. Conveniently selected small sample size, so care must be taken while projecting these results to whole population.
3. Only DHQ hospital Gujranwala was selected to conduct the survey. So considerable variation from these results may be found while applying these results to all government and private hospitals.

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ANNEXURE**QUESTIONNAIRE:**

1. Name: _____
2. Age: _____
3. Sex: _____
4. Occupation:
 - i. Staff Nurse
 - ii. Theater attendant
 - iii. Lab attendant
 - iv. Dispenser
5. Have you ever injured during working hours?

Yes No

6. How many times you got injured?

1.ONCE	2.TWICE	3.MANY TIMES
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7. In your opinion what may be the reason of your injury?

- i. Anxiety
- ii. beginner
- iii. Carelessness

8. On which part of body, you got injury?

1.Hands/Forearm	2. Any other part
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9. Injuring instrument was sterilized?

Yes No

10. What type of work you were doing at that time?

- i. Assisting operation
- ii. Injections
- iii. Taking samples
- iv. While disposing of instruments

11. Did you know the status of vaccination of patient about HBV, HCV and HIV?

Yes No

12. Have you ever done vaccination of yourself?

Yes No

13. When you got injured then what you did?

- i. Encourage the wound to gently bleed
- ii. Pressing the site being pricked.
- iii. Wash the wound using running water
- iv. Wash the wound using plenty of antiseptic