

HAND INJURIES AND ITS ASSOCIATED FACTORS: A CROSS-SECTIONAL STUDY AMONG INDUSTRIAL WORKERS AT HAYATABAD, PESHAWAR.

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ABSTRACT

Objective: To determine the frequency, pattern and associated factors of hand injuries among local industrial workers of Hayatabad Peshawar and the type of industry commonly lead to hand injuries.

Materials And Methods: A cross-sectional study conducted at Social Security Hospital, Hayatabad, Peshawar started from October 2015 to March 2016 by using consecutive sampling technique by taking all participant having work-related injuries. Proportions were compared using chi-square (χ^2) tests.

Results: A total of 154 industrial workers having a history of industrial injury were interviewed at social security hospital industrial state Hayatabad, Peshawar. The mean age of the participants was 32 years (SD 9.8) with a maximum age of 56 years and a minimum age of 14 years. Ninety-seven percent (n=150) of all the study participants were male, and 2.60 % (n=04) were female. While those with hand injuries, 96% (n=24) were male. Out of the total 154 participants, 16.23 % (n=25) had hand injuries while 83.77 % (n=129) suffered from other injuries. Laceration 44% (n=11) was in high proportion among all the pattern of hand injuries, followed by tendon injury 24% (n=6) and fracture 12% (n=3), while traumatic finger amputation was 20% (n=5).

Conclusion: Instructing the safety standards to labourers and motivate them to utilise some protective instruments, supervising the working performance of young, inexperienced workers, stressing the perception of law, hygienic and use of protective equipment can reduce the event of occupational hand injuries.

Keywords: Hand injuries, Industrial workers, Occupational Health

INTRODUCTION

World Health Organization (WHO) reported that each year injuries are responsible for around 3.5 million deaths all over the world¹. Accidents and resulting injuries have been identified

As a stand out amongst the essential reason handicap and disability

In both developed and developing countries, influencing individuals at all ages.^{3,2} The expenses of employment-related unplanned wounds are a great deal more than the expenses of other referred to illnesses, for example, AIDS, Alzheimer's, cancers and cardiovascular diseases^{4,5}.

As indicated by International Labour Organization (ILO), nearby 50 million occupation associated injuries happen globally per year and this is equivalent to around 16,000 wounds each day⁶. Injuries bring monetary burdens because of loss of working days of people's lives as well as bring mental anxieties to families^{7,8}. Worldwide health and disease profiles demonstrate a shift from the infectious diseases to

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non-communicable diseases and road traffic injuries. Injuries due to accidents have been known as the highest amongst the most well-known reasons for disability and deaths in our societies.

There is well-known information that hand damage is common in Pakistan. Numerous occupations create the man defenceless against hand wounds because of freshness, absence of preparing, playing out an abnormal work assignment, working after some time, individual stresses, feeling sick, breaking down gear/materials utilizing diverse work techniques, being diverted and hurrying all adding to the expanded rate of hand wounds in Pakistan. All inclusive, poor work-related health plus security results in the 271 million professional linked wounds, 20 laces occupationally related deaths, and 160 million industry-related illnesses annually.

+Occupational hand injuries can result in lacerations, crush injuries, fractures, tendon, nerve and vessels injuries. A study conducted in Pakistan reported that, among the hand injuries patients, 45.65% had hand fractures, 18.11% had lacerations, 12.31% had finger amputations, and tendon injuries occurred in 10.14% of patients^{8,9}. while a study conducted by Faisal Mushtaq et al. demonstrated that about 43 billion PKR is the assessed indirect expense of injuries annually in Pakistan^{10,11}.

The high rate of work-related injuries could be related to various variables including the absence of preparing, non-supervision, non-experience and absence of learning. It is important to be in mind that numerous labourers in this industry start work at an early age & frequently without satisfactory wellbeing¹².

Research demonstrated that move worker are more drained both amid and after movements than the daytime labourers, prompting poor-work execution¹³.

Hattingh et al. indicated in their study that injury prevention is dependent on safe work habits and practices of the employees. The attitude plays a significant role in the general practices of a person, and also influence his or her way of thinking about safety. The habit of using personal protective equipment develops in the context of positive or negative attitudes, and behaviours are not easily changed. Personal Protective Equipment should be used in conjunction with engineering control and work practices to provide high levels of protection.^{13,14}

There is a paucity of local studies on this topic. The

finding of developed countries may be different to our population due to general lack of safe environment and practices. This study was aimed to provide us with the local perspective of a global problem of hand injuries among industrial workers and would help us in recommending measures for preventing of hand injuries in Pakistan, particularly in the industry of Hayatabad, Peshawar. The objective of the study was to determine the frequency, pattern & its associated factors of hand injuries among local industrial workers of Hayatabad, Peshawar and the type of industry commonly leads to hand injuries

MATERIALS AND METHOD

A Cross-sectional study was done in Social Security Hospital, Labour Colony, Hayatabad, Peshawar, Khyber Pakhtunkhwa having Consecutive sampling technique. All Patients with injuries and employed in the industrial state of Hayatabad were included. The sample size was calculated by using WHO calculator, taking 10.14% prevalence from previous study having 95% confidence interval $\alpha=0.05$ and also adding 10% non-respondent rate, the total sample size was 154. The study was conducted after approval from Khyber Medical University(KMU) ethical board and hospital ethics and research committee. All the patients presenting to the OPD department or emergency with work-related injuries were included in the study. A detailed history was taken followed by physical examination. Confidentiality of the data was ensured. The type of injury was documented along with associated factors. All the information was recorded in designated Performa.

RESULTS

Out of total 154 participants, 16.23% (n=25) had hand injuries while 83.77% (n=129) suffered from other work-related injuries (Figure1).

The mean ages of all the participants were 32 years (SD 9.84) years with a maximum age of 56 years and a minimum age of 14 years

The age of all the participants was then categorized into three groups, i.e. less than 25 years which were 31% (n=49), 26 to 45 years which were 58% (n=90) and above 45 years which were 9.7% (n=15). Among

the hand injuries patients, 24% (n=6) were young; middle-aged workers were 68 % (n=17) while old were 8% (n=02).

Ninety-seven percent (n=150) of all the study participants were male while 2.60% (n=04) were female. Of those with hand injuries, 96% (n=24) were male.

Majority of the participants were married. In hand injuries workers, 72% (n=18) were married while 28% (n=7) were unmarried.

Those having hand injuries had lower education level as 56 % (n=14) had primary education and 28 % (n=07) were matriculate, 12% (n=3) were intermediate level, and 04% (n=01) were graduated (Figure5).

Laceration 44% (n=11) had high proportion among all the pattern of hand injuries, followed by tendon injury were 24% (n=6), and the fracture was 12% (n=3) and while traumatic finger amputation was 20% (n=5). (Figure 6)

There were 34% (n=51) skilled workers having formal training in all the participants while 66% (n=103) were unskilled professional. While those in hand injuries, unskilled workers were 80% (n=20) (Figure7).

There were no co-morbidities among 48% (n=12) of the hand injuries patients. However, there was a high proportion of chest infection 28 % (n=7).

Smoker were 16% (n=04), forty eight percent (n=12) were having good sleep. The Naswar (Snuff user) were 28% (n=7) while 08% (n=02) were having past

accidents (Figure08).

There were 92% (n=23) workers among hand injuries workers who had social security facility while 08% (n=02) had no social security.

Among the hand injured workers, there were 20% (n=05) who were using safety materials while 80% (n=20) were not using safety materials (Figure10)

The proportion of the different type of industry for hand injuries was also documented. There were 4% (n=01) in the packaging industry and same proportion for textile and construction industry. There were 12% (n=03) from the industry of metal Work handling. There was no workers food and electronics industry that has a hand injury. Similarly, plastic industry has 16% (n=04) while matches factory have high proportion 32% (n=08) of hand injuries (Figure11).

Mean monthly salary of total participants were 12652 rupees with a minimum of 6000 to 25000. Then we split it into two categories, i.e. below 12000 and more than twelve Thousand. Fifty-six percent of those with hand injuries were above then 12000. The minimum salary of Pakistan government for workers is 12000

DISCUSSION

The main objective of the study was to determine hand injuries frequency, pattern and its associated factors among local industrial workers of Hayatabad, Peshawar by collected data of 154 injured workers in social security hospital, Industrial state Hayatabad Peshawar,

Table-1: Frequency of Hand injuries among industrial workers

		Hand injury	Other Injuries	P-value
		Yes	No	
		N (%)	N (%)	
Age (years)	Young	6(24.0)	43(33.3)	0.50
	Middle age	17(68.0)	73(56.59)	
	Old	02(8.0)	13(10.08)	
Sex	Male	24(96.0)	126 (97.6)	0.63
	Female	1(4.0)	3(2.33)	
Education	Primary	14(56.0)	49(37.99)	0.08
	Matric	7(28.0)	36(24.08)	
	FA/FSC	3(12.0)	38(29.46)	
	Graduation	1(4.0)	10(7.75)	
The pattern of Hand Injuries				
	laceration	11(44.0)	0(0)	0.15
	fracture	03(12.0)	0(0)	

	fracture	03(12.0)	0(0)	
	Tendon injury	06(24.0)	0(0)	
	Traumatic fine amputation	05(20.0)	0(0)	
Skilled(Formal Training)	yes	05(20.0)	46(35.66)	0.1
	No	20(80.0)	83(64.34)	
Comorbidities	No	12(48.0)	59(45.74)	0.5
	Asthma	0(0.00)	5(3.88)	
	Neuroproblem	1(4.0)	2(1.55)	
	Chest Infection	7(28.0)	32(24.81)	
	Orthopedics	0(0.00)	5(3.88)	
	Diabetic	01(4.0)	3(2.33)	
	Heart Problem	0(0.00)	2(1.55)	
	Hepatitis	1(4.00)	3(2.33)	
	Skin problem	1(4.00)	0(0.00)	
	Back pain	01(4.0)	6(4.65)	
	Fever	0(0.00)	5(3.88)	
Marital Status	Single	07(28.0)	46(35.66)	0.46
	Married	18(72.0)	83(64.34)	
Personal Habits	Smoking	04(16.0)	24(18.6)	0.41
	sleep well	12(48.00)	74(57.36)	
	Naswar(Snuffing)	07(28.00)	7(28.00)	
	Past accident	02(08.0)	3(2.33)	
Presence of Social Security	Yes	23(92.0)	116(89.92)	0.748
	No	02(8.0)	13(10.08)	
Use of safety Procedure	Yes	05(20.00)	86(66.67)	0.18
	No	20(80.0)	86(66.67)	
Type of Industry	Packaging	1(4.0)	1(0.78)	0.65
	Metal Work handling	3(12.0)	7(5.43)	
	Hospital	0(0.00)	3(2.33)	
	Matches Factory	8(32.0)	39(30.23)	
	Plastic Work	4(16.0)	28(21.7)	
	Wood Work	3(12.0)	16(12.40)	
	Food Industry	0(0.00)	6(4.65)	
	Textile	1(4.0)	1(4.00)	
	Pharma	4(16.0)	18(13.95)	
	Construction	1(4.0)	1(0.78)	
	electronics	0(0.0)	4(3.10)	
Monthly salary	Less than 12000	11(44)	68(52.7)	0.42
	More then 12000	14(56)	61(47.29)	

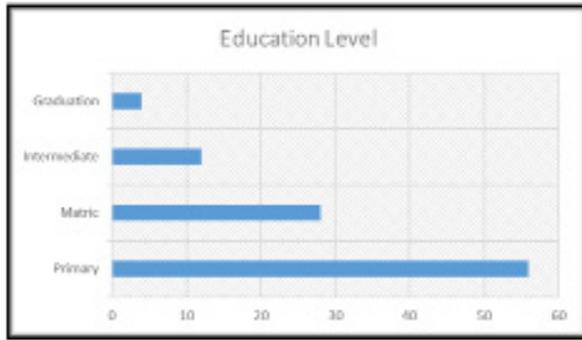


Fig 5. Education status of Participants



Fig 6. Pattern of injuries among hand injured workers

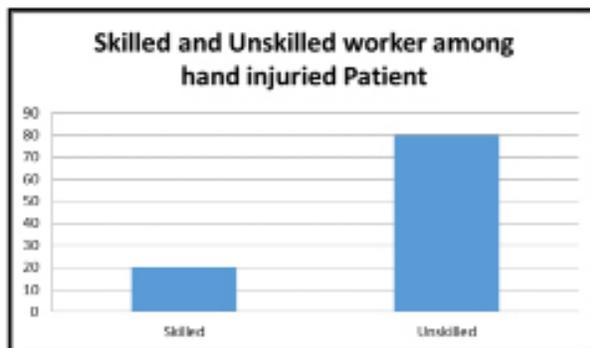


Fig 7.

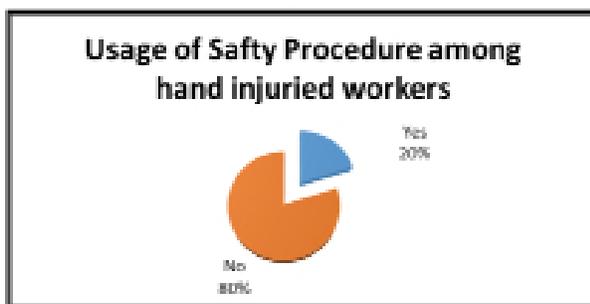


Fig 10.

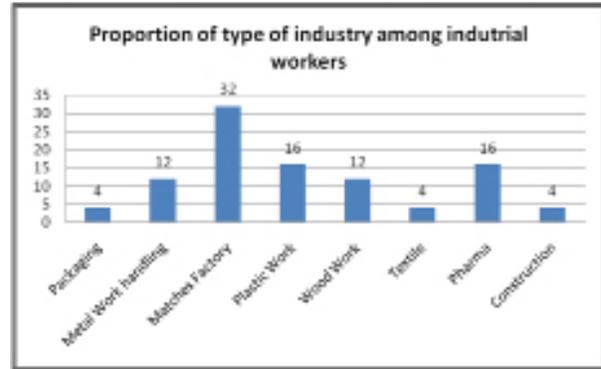


Fig 11. Percentage of Types of Industry involve in hand injuries.

while focusing on those having hand injuries through administered questioner.

In this study, the frequency of hand injuries was 16.23%, and the mean age of those hand injured workers was 32 years. The middle-aged workers were more likely to have hand injuries. Ninety-six percent of those hands injured were male, and 72 % were married. There was a high proportion (56%) of workers having primary education. The laceration was reported more (44%) compare to another pattern of injuries. The unskilled workers with formal training have a high frequency of 80% as compared to skilled workers. Chest infection was 28% which was high as compared to other co-morbidities. Majority of the workers (80%) were not using safety procedure. Thirty-two percent of hand injuries were reported from matches' factory which is the highest frequency among other industries. Mean monthly salary of all participants were 12,652 PKR. Furthermore, in this study, none of the determinants was identified to have statistically significant association with hand injuries on using chi-square.

This study identified 16.23% overall prevalence of hand injury among industrial workers which is almost near to a finding (13%) from a study conducted by Akram et al.¹⁵

My finding is also consistent with a study done in Bangladesh which indicate that hand injuries were 14% among cement industry workers¹⁶.

Most of our participants in my study were young with a mean age of 32 years which is consistent with the finding of the study, conducted in China by Jin et al.⁽¹⁷⁾ Another study in Turkey by Celik et al. showed that the mean age of occupational injuries was 32 (SD 9.7)¹⁸.

Majority of gender contributors in hand inju-

ries in this study were male (96%). A gender variance in hand injuries prevalence has been reported in the available literature as well¹⁹.

Subramanian A et al. represented that wounds to the hands and fingers were more common in men, while the wrist injuries were more common in ladies²⁰. Because the study was completed in largely working class population where both genders have not an equal chance of labour contribution and men, have to perform hard labour and also due to some culture barrier.

This study found that 56% of hand injured workers had primary education and it was found that as the level of education increases, hand injuries decreases. A study in Iran showed that most of the industrial workers had a primary level of education²¹. Therefore, more educated labours with the wisdom of responsibility for their employment seem vital to avoid work-related injuries.

Garg et al. from Hong Kong found in his study that 59% of occupational hand injured persons were illiterate having 63% of unmarried²². Which is little different from our finding where we found that 72% were married. This difference in finding may be due to some cultural differences between both the countries. Our finding indicates that young, less educated, married and being males are mainly susceptible to occupational injuries, which is consistent with results of different studies, around the world^{23,24,25}. That why educated workers with a logic of responsibility about their job look important to avoid work-related injuries.

In this study, the most common type of injury was laceration (44%), fracture (12%) and tendon injury (24%) while traumatic finger amputation was 20%. A study conducted by Saaiq et al. bone fracture was most frequently encountered while traumatic finger amputation was 12%⁸. The reason of a higher frequency of laceration may be newly presented machinery devices, alertness of workers while carrying out assignments that can bring about a serious injury, or imprudence of workers while performing tasks that can have possible little injuries.

Garg et al. showed that 72% of the workers were enjoying good sleep at night but in my results, 48% of workers have a good sleep at night, and they were less likely to develop hand injuries²². A systematic review conducted by K. Uehli et al. to measure the influence of sleep complications on work injuries showed that

workers with sleep difficulties had 1.62 times greater threat of being injured than workers devoid of sleeping issues²⁵.

This study indicates that majority of the participant (80%) were unskilled workers. Similarly, a study conducted in Ethiopia represented that 56.3% of the workers did not proceed for health and safety training²⁶. Probably, the reason of high percentage of unskilled workers in the participants is that owners of industries deliberately take unskilled workers for jobs as they are available on very low pays to compare to the skilled workers.

A study conducted by Gebremichael et al. described that 79.4% participants did not use PPE²⁷. My findings establish that glove usage could be a defensive effect on the hand injuries at work, though the associations were not statistically significant. In a dose-response relationship, those who were using safety materials were less likely to have hand injuries. This defensive impact was also recognised in another study by Sorock et al., which demonstrated that glove habit was defensive against hand laceration and cut wounds but not effective for another type of injury injuries¹⁹.

A study by Garg et al. revealed that construction site workers were the largest group(22) while in our study the matched factories were the most prevalent type of industry with a high hand injury of 32%.

Fifty-six percent of those with hand injuries were above 12,000 PKR. The government of Pakistan have 12000 PKR of minimum monthly salary package for any industrial workers, but it is still not justifiable for the low-income families, living in poor environmental settings which could affect them physically, mentally and ultimately leads to deteriorating their work performance. The lower socioeconomic position of workers is at greater threat of occupational hand injuries, relatively as they are involved in more physically challenging jobs and poorer health condition.

CONCLUSION

Concerning the outcomes of the present study and other studies, the part of preparing of modern labourers in work safety qualities and guidelines is focused. More than half of occupational injuries can be gotten away using executing right and productive projects and underline the perception of protective guidelines rules and regulation.

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