FREQUENCY OF SELF INFLICTED INJURIES IN MEDICO-LEGAL CASES AND ITS DISTRIBUTION AMONGST MALES AND FEMALES OF DIFFERENT AGE GROUPS

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ABSTRACT

Objectives: This is a one-year study to find the frequency and pattern of self-inflicted injuries found on scrutiny of the record of medico-legal cases conducted during 01-01-2016 to 31-12-2016.

Methodology: Out of a total of 3143 medico-legal cases conducted during the period of study, all the cases that fulfilled the inclusion criteria were selected. These were 77 cases where injury was caused by the victim himself. Analysis of these cases was made with respect to age, gender, type of injury, site of injury, nature of injury, number of injuries and employment status of the person.

Results: Cases of self-inflicted injuries constituted 2.45 % of all the medico-legal cases conducted during 2016 at Mayo Hospital, Lahore. The incidence of incised wounds was highest being 29% while corrosive burns constituted 27%, firearm injuries constituted 21%, flame burns 19%, lacerated wounds 2.6% and bruises 1.3%. Victims were primarily in the 11-30 year age group (80.52%) with a male to female ratio of 2.67:1.

Conclusion: Self-inflicted injuries are mostly incised wounds caused by sharp edged weapons. The most recurring site of injury is the forearm. Males are more commonly reported to be involved in such cases. Nature of injuries is predominantly non-suicidal. The usual pattern is a single injury in the low-income category males. However, among the life-threatening injuries, females outnumber males.

Keywords: Self-inflicted injury, Incised wounds, Firearm, Flame burn, Corrosive burn

INTRODUCTION

Injury is any unintentional or intentional wound or damage to the body. [1] Self-inflicted wounds are injuries produced by a person on his body or caused by another person acting in agreement with him to bring false charge against enemies or for self defense against some crimes. [2]

Commonly encountered self-inflicted injuries include cutting (incised wounds), severe scratching (abrasions), burning and banging or hitting (impact injuries). [3]

Self-inflicted wounds are mostly found on the accessible parts of the body and are usually superficial and minor and similar in style and shape. These wounds are mostly multiple and are found parallel and grouped together. Self-inflicted wounds show handedness; they may be right-handed i.e. present on left side of body and left -handed or present on right side of body and right-handed. Most of the times these wounds are tentative i.e. used for sympathy acts. Unlike other wounds, these wounds are not present on sensitive parts of body. [4]

Common sites of such wounds are typically anterior and lateral aspects of arms, anterior aspects of forearms, inner aspects of thighs; lower part of anterior abdominal wall. [5]

Self-inflicted injury may be suicidal or non-suicidal. A study described non-suicidal self-injury as the intentional destruction of body tissues without any intention of suicide and for socially unacceptable reasons. Self-injury is often executed to temporarily soothe intense negative emotions.[3] Self-inflicted injury in adolescence points towards underlying significant emotional and psychological suffering. For example, deficiencies in serotonergic functioning, in combination with certain family interaction patterns, may contribute to the development of emotional instability and risk for self-injury.[6]

Knowledge generated by this research is the basis of sustainable development, which requires that knowledge be placed at the service of development, so this research is a small step towards the study and education of self-inflicted injuries. Self-inflicted wounds carry considerable mortality and morbidity among otherwise fit young individuals.

This study assessed the pattern and outcome of these injuries in Pakistan. We reviewed all admissions of self-inflicted injuries over 1-year period. Weapons used, age, gender, nature of injuries and site of injuries were reviewed and studied. This study aims at exploring the pattern of self-inflicted injuries in our society and understanding the susceptible age and gender groups. We have also tried to find an association between income and tendency of self-inflicted injuries in our subjects. By doing this, we hope to raise awareness in or society and among authorities to provide better standard of living and create more suitable job opportunities. We expect that such measures might improve the mental health status of our community and result in reduction of incidence of such cases of self-harm.

A review of 23 studies conducted in Pakistan in 2008 revealed that the risk factors for self-inflicted injury included young age, female gender, mostly housewives, married and belonging to a low socio-economic status. Medications were commonly used for this purpose and the most common reported cause for this health outcome was interpersonal conflict. [7]

A 6-year study in Agha Khan University Hospital revealed that among cases of deliberate self-harm, the most common age group encountered was 21-25 years (22.2%). The majority were females (60.3%) of which 50% were married. Self-poisoning was the most common method employed for deliberate self-harm (95.1%).[8]

A study in the U.S examined the national trends from 1990 to 2000 in the utilization of health services by adolescents presenting with self-inflicted injuries. It showed increased rate of hospital admissions due to cutting (4.3% to 13.2 %), while reporting a significant decrease in the proportion of hospitalizations due to drug ingestion during a 10-year period. The discharge diagnosis for most youth was found to be a mental disorder.[9]

A 5-year study (1997 – 2001) in the US on self-inflicted injury and attempted suicide showed that people of young age (15 to 19 years) and female gender are more inclined towards self-injurious behavior. The most common method of injury was poisoning (68%), followed by cutting or piercing (20%). [10]

A systemic review of the literature published across the globe on topic of adolescent non-suicidal self-injury (NSSI) and deliberate self-harm (DSH) found no statistically significant difference in NSSI and DSH studies from different countries. It concluded that a common approach for assessment of such cases can be employed to aid cross-cultural study.[11]

The ultimate aim of this research is to generate measurable and testable organized data on the topic of self-inflicted injuries in MLC cases, gradually adding to the accumulation of human knowledge. The results will help to grasp the attention of authorities in order to generate grounds for improved psychological health such as better income plans.

In order to achieve this aim, our objectives were:

- To determine the frequency of cases with self-inflicted injuries.
- To observe the gender and age distribution within such cases.
- To know the most common site of body involved.
- To see the commonly occurring type of injuries.
- To detect a possible association with occupation.

MATERIALS AND METHODS

It was a Retrospective Descriptive Observational Study conducted at MLC Office, Forensic Medicine and Toxicology Dept. KEMU, Lahore from July 2017 – December 2017. We received Ethical Approval for our study from the Institutional Review Board of King Edward Medical University.

A sample of 77 cases was collected by Non-Probability Purposive Sampling.

All the cases where injury was caused to the victim by himself /herself were included in the study that were found on scrutiny of the record of medico-legal cases conducted during 1-1-2016 to 31-12-2016.

All other cases, where the injury was accidental or caused by someone else, were excluded.

Data Collection Procedure

Various parameters were noted from the medico-legal profiles. These parameters include Age, Sex, Occupation, Brief History, Type of Injury, Site of Injury, Number of Injuries (either single or multiple), Nature of Injuries (whether suicidal tendency is present or not) and Possibility of Fabrication.

RESULTS

The 77 cases of self-inflicted injuries comprised 2.45% of total 3143 cases for the year 2016.

The frequency and distribution of different types of mechanical injuries are shown in Fig 1. Incised wounds being the most common constituted 28.57% of total injuries.

The gender distribution amongst different types of self-inflicted injuries is shown in Table 1.

In females, the most expected manner of self-inflicted injury is corrosive burn by acid intake (71.4%) followed by incised wounds (23.8%). In males, the most frequent type of self-inflicted injury we come across is injury by sharp edged weapons (30.4%) followed by firearm and flame burn alike (26.8%).

Females are more prone to self-inflicted injuries in the second (58.38%) and third (38.10%) decade of their life as shown in Table 2. It is also observed that females are more inclined towards suicidal behavior. 76.2% females inflicted grave injuries upon themselves, mostly in the form of corrosive burns.

On the other hand, self-inflicted injuries in males surge in the third (67.86%) and fourth (21.43%) decade of life. 62.5% of the injuries are non-life-threatening while 37.5% injuries are considered life-threatening.

Assessment of employment status shown in Fig. 2 shows that most females associated in the act are unemployed, 95.24% i.e., 20 out of 21 females. Of these, 60% were housewives (12 out of 20), 25% were unmarried females (5 out of 20) and 15% were students (3 out of 20). On the contrary, majority of males (41 out of 56) belong to the low-income category (73.21%), mostly being laborers (56% i.e., 23 out of 41). 8 out of 56 were unemployed (14.3%) and 7 out of 56 belong to the moderate-income category (12.5%).

These results point towards underlying stress, anxiety and mental health disturbance associated with a low income or unemployment.

The most common site of body involved is the forearm and wrist (19.51%) followed by head (14.63%), thigh (12.20%) and leg (9.76%) as shown in Table 3.

Table I: Gender distribution in Self-inflicted injuries

		GENDER DISTRIBUTION IN SELF INFLICTED INJURIES			
		Female		Male	
		Number	Percentage %	Number	Percentage %
Type of Injury	Incised wound	5	23.8%	17	30.4%
	Lacerated wound	0	0.0%	2	3.6%
	Firearm wound	1	4.8%	15	26.8%
	Flame burn	0	0.0%	15	26.8%
	Corrosive burn	15	71.4%	6	10.7%
	Bruise	0	0.0%	1	1.8%
Total		21	100%	56	100%

Table II: *Age distribution in Self-inflicted injuries. Also showing nature of injuries.*

		AGE DISTRIBUTION IN CASES OF SELF INFLICTED INJURIES											
		Incised wound		Lacerated wound		Firearm wound		Flame burn		Corrosive burn		Bruise	
		Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male
Age ranges	0 to 10	0	0	0	0	0	0	0	0	0	0	0	0
	11 to 20	0	1	0	0	1	1	0	1	10	1	0	1
	21 to 30	3	10	0	2	0	9	0	12	5	5	0	0
	31 to 40	1	6	0	0	0	4	0	2	0	0	0	0
	41 to 50	1	0	0	0	0	0	0	0	0	0	0	0
	51 to 60	0	0	0	0	0	1	0	0	0	0	0	0
Nature of Injuries	Life-threatening	1	4	0	0	0	2	0	8	15	6	0	1
	Non-life threatening	4	13	0	2	1	13	0	7	0	0	0	0
Total		5	17	0	2	1	15	0	15	15	6	0	1

Table III: *Classification of Self-inflicted injuries according to site of body involved*

		CLASSIFICATION OF INJURIES ACCORDING TO SITE OF BODY INVOLVED														
		Head	Neck	Front of chest	Front of abdomen	Arm	Forearm	Wrist	Hand	Thigh	Leg	Foot	Side of chest	Head and Neck	Forearm & neck	Head & Arm
Type of Injury	Incised wound	3	2	0	2	0	6	2	0	1	2	0	1	1	1	1
	Lacerated wound	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Firearm wound	1	0	2	1	1	0	0	2	4	2	3	0	0	0	0
	Bruise	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Total		6	3	2	3	1	6	2	2	5	4	3	1	1	1	1

Table IV: *Number of injuries in different cases of self-inflicted wounds*

		Number of Injuries in Different Cases							
		Incised wound		Lacerated wound		Firearm wound		Bruise	
		Number	Percentage %	Number	Percentage %	Number	Percentage %	Number	Percentage %
Number of Injuries	Single Injury	15	68.2%	2	100.0%	16	100.0%	1	100.0%
	Two injuries	3	13.6%	0	0.0%	0	0.0%	0	0.0%
	Multiple Injuries	4	18.2%	0	0.0%	0	0.0%	0	0.0%

The most common site of injury for incised wounds observed in the 22 cases of injury with sharp edged weapon is the forearm (27.27%). In 13.64% of the cases of incised wounds, the injuries involve two different sites and are not restricted to a single site of the body.

The only site of injury observed in cases of lacerated wounds is the forehead (100% i.e., 2 out of 2 cases). This is produced in both cases by hitting the head against the wall by the victim himself.

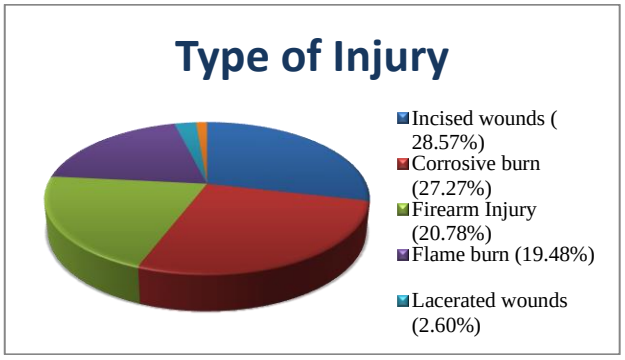
Of the 16 cases of self-inflicted firearm injury, the most common sites of body affected are thigh (25.0%) followed by foot (18.75%). Two cases of suicidal firearm wounds presented with injury on the head and chest respectively.

There is a single case of bruise produced on the neck seen in a 12-year old boy who attempted suicide using a ligature.

There is greater trend of single injury compared with multiple injuries as presented in Table 4. Only cases of incised wounds presented with multiple injuries.

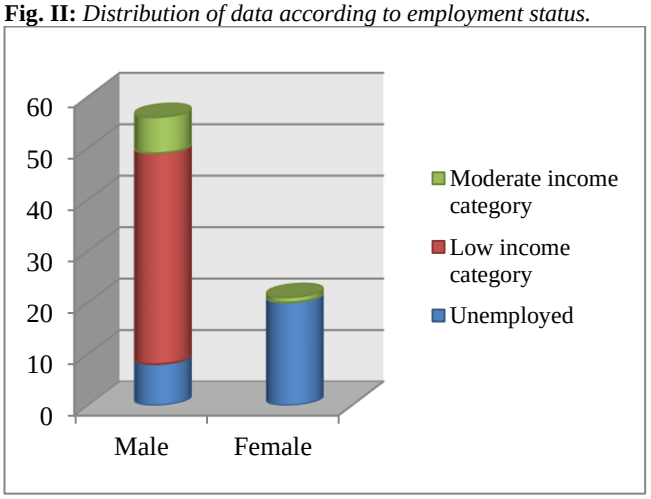
The sites of body usually involved in multiple incised wounds are the forearm (71.43% i.e., 5 out of 7 cases) and neck (28.57% i.e., 2 out of 7 cases) where there is no involvement of clothes.

Fig. I: Types of Self-Inflicted Injury



Total cases: 77
Incised wounds: 22
Corrosive burn: 21
Firearm Injury: 16
Flame burn: 15
Lacerated wounds: 2
Bruise: 1

Fig. II: *Distribution of data according to employment status.*



- Males: 56

Moderate income category: 7
Low-income category: 41
Unemployed: 8

- Females: 21

Moderate income category: 1
Low-income category: 0
Unemployed: 20

DISCUSSION

Tendency of self -inflicted wounds is prevalent in Pakistan. However, there is scarcity of available literature on this issue. Hence, our study serves to represent the outcome of self-inflicted wounds in our country. However, owing to lack of self-inflicted wounds being registered in our country, exact incidence of such injuries is difficult to estimate. Our study constituted 77 cases, where injury was caused by victim himself. It was conducted during the time of 1 year (01-01-2016 to 31-12-2016) at Medico-legal Department of Forensic Medicine and Toxicology, KEMU, Lahore.

Our study came up with emerging findings of more males being involved in acts of self-injury than females. Furthermore, it revealed a greater tendency of females, mostly housewives, towards life-threatening actions. In this regard, corrosive burns by acid intake were most common.

In males, most frequent type of self-inflicted injury we came across was by sharp edged weapon i.e. 30.4%. Davison AM also claims a male predominance (3:1). [12] He says that arm is the commonest site of injury and this is comparable to our study. According to him 69%

cases show more than one injury. This is high compared to our finding of 31.8% multiple wounds.

According to our studies, self-inflicted incised wounds occurrence is more in males than females, with the age range from 21-30 years being more prone to it, which is correlated with the results found by Rabi S, Sulochana J, Pawan S i.e. 56.7% males and 43.3% females. According to them, males outnumbered females and the mean age (standard deviation) at the time of act and current presentation were 16.52 (3.13) and 24.70 (5.54) years, respectively.[13]

Flame burns constituted19.48% of total self-inflicted wounds which comprises 100% of males and 0% females according to our studies, which is very low as compared to incidence found by Pakistani authors Saaiq M and Ashraf B.[14] Their study reported self-burn at a frequency of 80.64% females and 19.35% males. This difference in results can be attributed to non-probability sampling technique.

Of all burn cases, corrosive burns constituted 58.33% while flame burns constituted 41.67% in our findings. The occurrence of corrosive burns found in our study is very high compared to 1.29% found by Tahir and a flame burn incidence of 95.44%. We found that the overall prevalence of self-inflicted flame burns is 19.48% compared to 9.80% found by Tahir, Memon, Kumar and Ali.[15]

Self-inflicted bruises were not common i.e. constituting 1.8% of total self-inflicted injuries.

Self-inflicted firearm wounds are more usual in males(26.8%) as compared to females(4.8%) which is similar to the results of Williams ST, Kores RC, Currier JM who stated that there is over representation of men as compared to women.[16] According to their studies, the most common sites of gunshot wounds are face, head, neck and abdomen but in our studies, in addition to these areas, chest, arm, hand, thigh, leg and foot are also included, with greater incidence of involvement of lower half of body compare with the upper half indicated in their results.

Comparing our study with studies on suicidal incised wounds, [17], [18] we found that while incised wounds comprise 22.7% females and 77.3% males in our study, the study by Byard, Roger W, Klitte, et al [17] also supports a high male (68.6%) to female (31.3%) ratio. This is supported by finding of 83.5% males and 16.5% females by Bukur M, Inaba K, Barmparas G, et al. [18] When focal injuries are compared, we found that injuries to neck comprised 9% in our non-suicidal injuries which is low compared to 35% of suicidal injuries found by Byard, Roger W, Klitte, et al. [17] Inspection of incised wounds of arm show that females more commonly injure their forearms and wrists. Our study shows 62.5% females and 37.5% males presented with self-inflicted injuries on arm. This is comparable with 87.5% females and 51.4% males. [17]

The study by Bukur M, Inaba K, Barmparas G, et al. [18] also shows that 19.5% of suicides were attributed to firearm injuries of which 76.4% are on the head, while our study gives a 26.8% incidence of gunshot wounds of which only 1 case (6.25%) is on the head.

A significant number of cases of self-injury, such as scratching and superficial cuts, do not require no treatment. Hence, they do not present to the hospital and remain unregistered. Similarly, cases presenting to the private hospitals remain to be investigated. Question arises regarding the proportion of these subjects who are diagnosed with a psychiatric illness and what healthcare facilities they are provided with. The outcome of patients with generalized anxiety and depression still needs to be explored.

LIMITATIONS

Our study is a retrospective one with no enquiry into the mental health status of the individual. Paucity of data in this regard holds us from commenting on the possible causes of such behavior.

CONCLUSION

Injury by incised wounds accounts for the most common form of self-inflicted injuries, being chiefly present on the forearm and wrist. Incidence of self-inflicted injuries is more in males compared to females. It is most common in the third decade of life (59.74%). The injuries incurred are almost equally distributed between non-life-threatening (52%) and life-threatening (48%). Incidence of single injuries is greater compared with multiple injuries. Males in the low-income category have a greater propensity towards such attitude. These results should help the organizations working for welfare and rehabilitation of patients with psychological problems also with tendency of self-harm.

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