The Professional Medical Journal
www.theprofesional.com

DOI: 10.29309/TPMJ/18.4860

ORIGINAL PROF-4860

PATTERN AND DISTRIBUTION OF FATAL BLUNT INJURIES;

AUTOPSY STUDY AT FAISALABAD.

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Article received on:
09/04/2018
Accepted for publication:
20/06/2018
Received after proof reading:
00/00/2018

ABSTRACT… Background: Blunt weapon injury is a result of direct mechanical force and is contrasted with the edged weapons. **Objectives:** To find out the magnitude of deaths due to blunt trauma in Faisalabad city and to determine the most frequent age group, manner of death, gender distribution and the body parts commonly involved in unnatural deaths resulting from blunt injuries. **Study Design:** It is a retrospective and descriptive study based upon non-interventional cross sectional and longitudinal data. **Setting & Duration:** Study was conducted in the Department of Forensic Medicine, Punjab Medical College, Faisalabad for the period of Seven years from 1st January, 2010 to 31st December, 2016. **Materials and Methods:** Four hundred and ninety one corpses died of fatal blunt injuries brought for autopsy during stated period. Detailed scrutiny of autopsy record / police inquests related to all 491 deaths resulting from blunt trauma was done, the data collected on a predesigned proforma. The results prepared; Descriptive Statistics & Frequency Distribution was used to compute the findings. **Results:** Out of the total 491 fatalities caused by blunt injuries, 422 (85.94%) were males and 69 (14.06%) females. Majority 118 (24%) were in the age group 20-29 years involving 102 males and 16 females. Death toll due to fatal blunt injuries was highest in year 2011 involving one hundred & eighteen cases. The target area was head & chest in most of cases. **Conclusion:** Deaths due to blunt trauma are frequently occurring in the city of Faisalabad and such cases have high reporting in tertiary care hospitals. The frequency of male is higher and youth belonging to 3rd decade of life are frequently involved. There should be proper law enforcement so the loss of human life is minimized.

Key words: Blunt Force, Trauma, Pattern of Injuries, Unnatural Death, Autopsy.

Article Citation: Naheed K, Qasim AP, Tariq SA, Bhatti MA, Qasim JA. Pattern and distribution of fatal blunt injuries; autopsy study at Faisalabad. Professional Med J 2018; 25(7):975-980. **DOI:**10.29309/TPMJ/18.4860

INTRODUCTION

Pathology (Diseases) or aging factors are cause of natural deaths while on other side; unnatural deaths are due to injury (homicide /murder), accidents or suicide.[1] The socioeconomic and cultural factors of a country are generally related to the cause of unnatural deaths.[2,3] Blunt weapon is an instrument with a solid object that can damage the target as a result of direct mechanical force and is contrasted with the sharp edged weapons. There is no point or edge in blunt objects that can penetrate into the body. Mechanical injuries are divided into blunt weapon injuries, sharp weapon injuries and injuries caused by firearm.[4] Mechanical injury also includes lacerated wound as a result of hard and blunt force impact, characterized by tearing and splitting of issues. The blunt instruments normally impose, abrasion, fractures, causing bruising, laceration, internal bleeding and blunt force trauma. It may depend upon the body parts where it is attacked; as a result the organs may be damaged or may rupture. The attacks are deemed fatal with a blunt instrument. Mostly cases are reported on head.[5] A number of blunt weapons are easily available in a ready state, and generally reported in crime cases such as walking sticks, hammers, pipe wrenches, wrecking bars and heftier flashlights. Further tools, such as sports instruments baseball or Cricket bats, wickets, hockey sticks, golf stick and pool cues etc. Moreover weapons like nightsticks, axes back, batons, spears, firearm as a blunt weapon.[6] Lastly it may include tree branches and mill wall bricks. Safety measure should be taken to avoid such kind of injure because these injuries can cause damage the external skin epithelium

and underline tissues. Moreover it is due to the pressure or sliding force compression and has a sound impact. In Pakistan many deaths occurred which remain unreported and every autopsy is not brought to the mortuary except those which are declared medico-legal autopsy of unnatural deaths by Law enforcement agencies as per police demands.[7]

Objective of the Study

The main objective of this empirical study was to find out the magnitude of deaths due to blunt trauma in Faisalabad city and to determine the most frequent age group, manner of death, gender distribution and the body parts commonly involved in unnatural deaths resulting from blunt injuries.

Material and Method

This retrospective study was conducted in the Department of Forensic Medicine, Punjab Medical College Faisalabad for a period of Seven years from 1st January 2010 to 31st December 2016. Total 491 corpses died of fatal blunt injuries brought for autopsy to the Postmortem unit of Punjab Medical College Faisalabad during the stated period were included for detailed study. Further this study was descriptive and non-interventional having cross sections and longitudinal data. After the detailed scrutiny of autopsy record / police inquests maintained in Forensic Medicine Department (PMC) Faisalabad, the data was transferred on a predesigned proforma. Results were tabulated/ computed for all parameters by using frequency and percentages. Bar charts were used to express the data behavior related to the deaths by blunt means. The data was collected and compiled in Excel for the purpose analysis by using Statistical tool box.

RESULTS

Table-I indicates that the mean and standard deviation of male and female death is 53±34 and 9±5 respectively. In aggregate the mean and standard deviation of deaths due to blunt trauma during the year 2010 to 2016 is 61 ± 38. It indicates that the risk of death due to blunt weapon has greater tendency in males than female. The median value of deaths due to blunt weapons in male and female is 46 and 11 respectively.

Table-II indicates the involvement of 422 (85.94%) male and 69 (14.06%) females among victims of fatal blunt injuries. Majority of the victims were within the age group of 20-29 years involving 118 (24%) deaths and out of these fatalities, 102 were males and 16 females. The second age group was 10-19 years involving 99 male and 12 females reported to die of blunt trauma. In aggregate 23% fatalities account for the age group 10-19 year as well. Least number of victims was found in age group of 70-79 and 60-69 years i.e. 3% and 6% respectively. It was deemed that the youth are more commonly involved in the interpersonal conflicts. The reasons may include annoyance, intolerance, unemployment, poverty, family and neighborhood environment, drug addiction and easy accessibility to the weapons.[8]

Table-III. shows the highest frequency of deaths due to blunt trauma i.e. 118 fatalities in year 2011 involving 112 male and 6 females whereas the lowest number of deaths of males was reported in year 2013 involving 17 cases only. However, it sharply increased in year 2016 as 102(24%) deaths of males were caused due to blunt injuries. Results reported that the number of female deaths due to blunt trauma was high in year of 2016 i.e. 13 (19%). In aggregate highest number of deaths caused by blunt means were reported in 2011 and 2016 involving 118 & 115 victims respectively.

Statistics	No. of Male Victims	No. of Female Victims	Total
Mean	53	9	61
Median	46	11	54
Standard Deviation	34	5	38
Sum	**422**	**69**	**491**

Table-I. Descriptive statistics: Distribution of gender in victims of fatal blunt injuries.

Age Groups (Yrs)	Frequency & % in Males	Frequency & % in Females	Total No.	Total %
0-9	28 (7%)	10(14%)	38	8%
10-19	99 (23%)	12(17%)	111	23%
20-29	102 (24%)	16(23%)	118	24%
30-39	62 (15%)	11(16%)	73	15%
40-49	56 (13%)	12(17%)	68	14%
50-59	36 (9%)	3(4%)	39	8%
60-69	27 (6%)	3(4%)	30	6%
70-79	12 (3%)	2((3%)	14	3%
Total	422 (85.94%)	69 (14.06%)	491	100%

Table-II. Age distribution of male and female victims of fatal blunt injuries

Years	Frequency in Males	Percentage in Males	Frequency in Females	Percentage in Females	Total (M+F)	Total %
2010	46	11%	9	13%	55	11%
2011	112	27%	6	9%	118	24%
2012	63	15%	11	16%	74	15%
2013	17	4%	9	13%	26	5%
2014	49	12%	12	17%	61	12%
2015	33	8%	9	13%	42	8%
2016	102	24%	13	19%	115	23%
Total	422	100%	69	100%	491	100%

Table-III. Year wise distribution of male & female deaths caused by blunt injuries

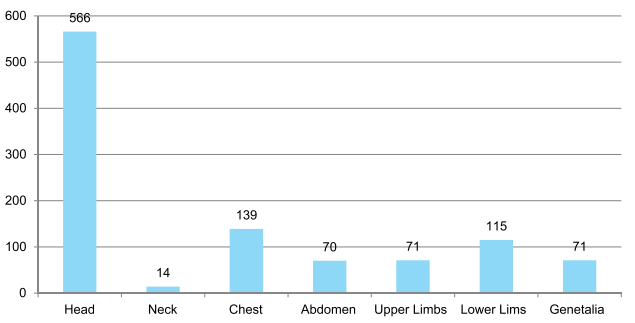

Figure-1. Distribution of blunt Injuries on the different parts of body

The above figure indicates that the injuries reported on head were higher than attacks on chest i.e. 566 and 139 respectively whereas 115 and 71 injuries were noted on upper limb and genitalia respectively and 70 injuries were observed on abdomen. The lowest number of blunt injuries was reported on neck in 14 cases only. The primary target areas were the head and chest. These results were inconformity with the knowledge that vital organs (Brain, Heart & Lungs) were situated there in Head & Chest.[9]

Table-IV indicated that (60, 12.22%) was the highest death rate in the month of April, in which (50, 11.85%) were males and (10, 14.49%) females. Month of April is harvesting season of wheat in Pakistan and blunt weapons are easily available to the labor. So it seems that it might be one of the reasons. The lowest death rate resulting from blunt trauma was noted as 5.70% in the month of February.

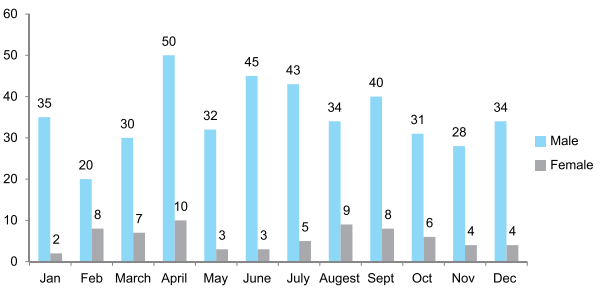

Figure-2. Month wise distribution of male and females deaths due to blunt weapons

The highest number of deaths occurred in the summer season from April to September. However, in winter season, the deaths were lower in male but in spring and autumn season, the number of female victims was on higher side. It may be due to increase in social activities like family festivals, marriages arrangement, Melas and Uras etc.

Month	Frequency in Males	Percentage in Males	Frequency in Females	Percentage in Females	Total (M+F)	Total %
Jan	35	8.29	2	2.90	37	7.54
Feb	20	4.74	8	11.59	28	5.70
March	30	7.11	7	10.14	37	7.54
April	50	11.85	10	14.49	60	12.22
May	32	7.58	3	4.35	35	7.13
June	45	10.66	3	4.35	48	9.78
July	43	10.19	5	7.25	48	9.78
August	34	8.06	9	13.04	43	8.76
Sept	40	9.48	8	11.59	48	9.78
Oct	31	7.35	6	8.70	37	7.54
Nov	28	6.64	4	5.80	32	6.52
Dec	34	8.06	4	5.80	38	7.74
	422	100	69	100	491	100

Table-IV. Month wise percentage of deaths in male & female victims of blunt trauma

DISCUSSION

During the study period, 491 cases of fatal blunt injuries were recorded and it is quite higher. The total population of Faisalabad city is 3.204 Million which quite lesser than population of Karachi and Lahore; as the people have many disputes and enmity therefore, the higher number of deaths caused by blunt weapon have been reported.

In a similar study conducted by Khalil ZH et al[7] in Peshawar reported 279 cases of blunt injuries which were 8.5% of total unnatural death during January 2009 to April 2012. In accidental 317 (9.7%) of 3265 cases were indentified involving 281 (9.9%) male and 36 (8.5%) females. Unnatural deaths were higher in male i.e. 85.94% than females 14.06% in our study and these findings are in line with those as reported by Hassan Q et al[10] in a study held at Abbottabad as well as in a study conducted by Bhatti MA et al[2] held at Gujranwala reporting involvement of (85.45%) males and (14.55%) females. The male preponderance observed in this study is consistent with the finding of another local study conducted in Faisalabad by Qasim AP et al [17] showing the involvement of 74.81 % males in unnatural deaths. Majority of the victims of fatal trauma were between 11-30 years, and of these 213 cases 92(43.19%) were caused by blunt objects and 38(17.84%) deaths occurred due to roads traffic accidents.[2] In another study during 2012 at THQ Hospital Texla, Chughtai et al examined the record of 64 autopsies in which 9 (14.06%) deaths occurred due to blunt injuries and the victim's age group was 26 – 40 years. The most targeted areas were skull and chest.[1] These observations are consistent with the similar other studies carried out in different time spell at different geographical areas.[11] Similar rates have also been reported by the researchers in Lahore and Faisalabad in their studies.[9,12] In a recent study held at Multan during the period Oct 2015 to April 2016, 100 cases were identified of head injuries by Blunt force. In these injuries 42 cases were reported Scalp and Skull Injuries, 4 cases for skull fracture and 36 cases were Scalp and skull fracture. Remaining was based upon vault and base fracture.[13]

In a study held at Sri Lanka conducted by Lakmali et al[14], out of the total 230 cases of unnatural deaths, 154(72.3%) were related to the blunt force defense's injuries. The different age group of 31-40 years and the highest attacks were reported on (94%) on left and right upper limbs. A study conducted at North Italy documented 53 cases of fatal blunt trauma during the period 1982 to 2012. Out of which 30 (57%) victims were male & 23 (43%) females. The average age of victims was 47.9 years.[15] In another study; 200 cases of fatal blunt trauma were examined for medico-legal autopsies and majority of victims belonged to the 3rd decade of life (21-30 years). It was further reported that 89.5% deaths occurred due to vehicular accidents followed by 4% died of blunt weapon injuries. As regards target area is concerned; 43% deaths were caused due to

attack on head whereas 24% victims of serious blunt trauma died of Hemorrhagic shock.[16] In a specific study held at Salt River mortuary at Cape Town South Africa. The patterns of blunt force trauma were examined in a five years retrospective review of autopsy reports. A total number of cases were 15519 out of which 1198(7.72%) cases were regarding to blunt force trauma. It is identified that due to poor social-economic conditions of the city of Cape Town the risk of blunt force has been increased in men.[6] During the period 1991 to 2009 a study was carried out by Luef SM et al[18] in the institute of Forensic Medicine, University of Southern Denmark, total 2,957 autopsies were performed and 28.2% deaths resulted due to blunt injuries. Head and neck were targeted in 56.1% cases whereas number of female victims was more than males.

CONCLUSION

Deaths resulting from blunt injuries are frequently occurring in the city of Faisalabad and such cases have high reporting in tertiary care hospitals of Faisalabad. The frequency of male is higher and youth from age group of 20-29 years are frequently involved. The most targeted regions of the body are head and chest. There is a dire need to create awareness and sensitization in general masses about the dangers of blunt trauma. There should be proper law enforcement to reduce the frequency unnatural deaths so the loss of human life is minimized.

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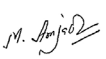
AUTHORSHIP AND CONTRIBUTION DECLARATION

Sr. #	Author-s Full Name	Contribution to the paper	Author=s Signature
1	Kishwar Naheed	Study design, Collection of data, Preparation / tabulation of results & Statistical Analysis	
2	Altaf Pervez Qasim	Layout of manuscript, Literature review / Discussion & authentication of references.	
3	Saeed Akbar Tariq	Data analysis, Comparison of results with other studies & Proof reading.	
4	Muhammad Amjad Bhatti	Literature review, Proof reading & Critical analysis.	
5	Junaid Altaf Qasim	Helped in typing & layout of manuscript, Proof reading & authentication of references.