

## Retrospective Study of Firearm Injuries

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### Summary

*A retrospective study of 281 patients, admitted out of the total 368 fire-arm injury cases received in the Casualty section of Surgical 'B' Unit, Lady Reading Hospital, Peshawar from 1-1-1985 to 31-12-1985, has been carried out so as to find out the age, sex and geographic distribution, any correlation with lunar dates, the major cause of the injury, the site of body and organs injured and finally the results discussed with regards to morbidity and mortality.*

### Material and Methods

This project was carried out to find out the following facts about fire-arm injuries which were handled by Surgical 'B' Unit, Lady Reading Hospital Peshawar :- 1) To determine the number of fire-arm injuries (FAI) handled by this Unit during the one calendar year; 2) To find out the percentage of patients received as firearm injuries, out of the total patients received in emergency by the Unit; 3) To find out the geographic area of greatest incidence; 4) To determine relationship between these incidents and lunar dates if any; 5) To find out the major cause of these injuries and the type of weapon used by the people; 6) To determine which site of the body was most commonly hit and the organs injured and 7) in the end, the results are discussed with regards to the morbidity and mortality.

With these aims in mind, a proforma was prepared which was filled in for each patient received as a case of firearm injury. Since a few retrospective cases were also included, the data was collected from the admission registers of the Casualty section and the wards of Surgical 'B' Unit.

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The complete details of the study are shown month-wise. The total number of patients received as firearm injuries from 1st January to 31st December, 1985 in the Casualty section of the Surgical 'B' Unit was 368. Out of these patients, 281 were shifted to the male and female wards and the relevant data was collected from them. The remaining 87 patients had only superficial minor injuries and were disposed off after treatment in the Casualty department.

### Monthly Distribution of Patients

Total number of 368 patients were received in the Casualty section of Surgical 'B' Unit, L.R.H. Peshawar as firearm injuries during the year 1985. Out of these, 281 patients were shifted to the wards from the Casualty section.

It appears that the firearm injuries have a pattern of increased and decreased incidence. It is higher in the summer months and during the month of Ramazan. This can be explained by the fact that the heat makes the temper hot and the people stay out in the open for longer periods. In the colder months, the life becomes more indoor and probably temper becomes cold: thus the rate of incidence decreases (Table I).

TABLE I  
MONTHLY DISTRIBUTION OF PATIENTS

Month of Year 1985	No. of Patients Received in Casualty Section			No. of Patients Shifted to Wards		
	Day time	Night* time	Total	Male ward	Female ward	Total
Jan.	16	1	17	15	2	17
Feb.	22	1	24	15	3	18
Mar.	33	3	36	24	3	27
Apr.	32	3	35	21	6	27
May	33	3	36	28	5	33
Jun.	38	3	41	28	6	34
Jul.	28	3	31	11	8	19
Aug.	31	4	35	19	4	23
Sep.	26	1	27	20	6	26
Oct.	37	4	41	21	5	26
Nov.	21	1	22	15	3	18
Dec.	23	0	23	8	5	13
<b>TOTAL</b>	<b>340</b>	<b>28</b>	<b>368</b>	<b>225</b>	<b>56</b>	<b>281</b>

\* (Note :- time taken as sunset to sunrise).

## Age and Sex Distribution

### AGE

Age was another fact which was analysed in this survey. In the following data for the year 1985, the average ages for the months are shown (Table II). The yearly age (average) is calculated in the end: this average age is also of the 281 patient who were shifted to the wards.

**TABLE II**  
**AGE DISTRIBUTION**

Month of Year 1985	Average Age in Years
January	27.00
February	25.00
March	29.36
April	29.25
May	25.50
June	27.00
July	31.80
August	28.00
September	33.40
October	30.60
November	29.60
December	33.60

29.17 years is the average age for 281 patients received as firearm injuries in the wards.

### SEX

The sex distribution of the 281 firearm injuries which were received in the wards was as follows (Table III) :-

**TABLE III**  
**SEX DISTRIBUTION**

Sex	Total Number	Percentage
Male	225	80.00
Female	56	19.90
<b>TOTAL</b>	<b>281</b>	<b>100</b>

The male/female ratio turned out to be as 4.5 : 1

### Geographic Distribution

Another point which was kept in mind during the compiling of this survey was to find out the area of greatest incidence of the firearm injuries.

To collect the data, the addresses were grouped according to their respective district/agency areas (Table IV). The majority of the patients who were admitted in our wards came from ten areas: these are listed below. The monthly distribution of the patients is also shown in front of these addresses :-

Hence the maximum number of patients received were from Peshawar district (55.87%), which includes Tehsil Charsadda and Nowshera. The districts/agencies arranged in a descending order of incidence are as follows :-

Name of District/Agency	No. of Patients	Percentage
Peshawar	157	55.87
Mardan	33	11.74
Mohmand	28	9.96
Dir	17	6.04
Kohat	13	4.62
Bannu	11	3.91
Malakand	9	3.20
Swat	7	2.49
Kurram	4	1.42
Waziristan	2	0.71
TOTAL	281	100.00

The above results may not be conclusive about the real incidence of firearm injuries because Lady Reading Hospital caters only to a particular catchment area.

### Correlation With Lunar Dates

Since prehistoric times, the full moon has kept mankind in awe. In the dark ages and even now in some circles, the full moon is thought to have some effect on the mind of an individual: the pregnant females are advised to stay indoor to prevent postnatal complications, and the crime rate and the incidence of arson is thought to increase but there are no concrete facts supporting these beliefs.

TABLE IV  
GEOGRAPHIC DISTRIBUTION

Name of District/Agency	Month of Year 1985												Total
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Waziristan	—	—	—	—	—	—	—	—	2	—	—	—	2
Malakand	—	—	—	—	2	2	—	—	3	2	—	—	9
Dir	—	—	2	—	2	2	4	2	2	2	—	1	17
Swat	3	2	—	—	—	—	—	—	—	—	2	—	7
Mardan	3	3	6	2	—	3	—	3	2	5	3	3	33
Peshawar	6	8	14	23	25	21	11	13	12	10	8	6	157
Mohmand	3	3	2	—	—	—	—	5	5	4	4	2	28
Kohat	1	2	—	—	2	6	—	—	—	—	1	1	13
Bannu	1	—	3	2	2	—	—	—	—	3	—	—	11
Kurram	—	—	—	—	—	—	4	—	—	—	—	—	4
<b>TOTAL</b>	17	18	27	27	33	34	19	23	26	26	18	13	281

Keeping these things in mind, it was decided to tally the data collected about the firearm injuries with their respective lunar dates so as to find out if any correlation existed! (Table V)

A separate column was kept for the number of the firearm injuries (FAI) taking place within  $\pm$  two days of the full moon (14th day) to give a broader field to the moon to act on.

TABLE V  
CORRELATION WITH LUNAR DATES

Solar Months of Year 1985	No. of Patients on Full Moon $\pm$ 2 Days	Percentage of Total Monthly Admissions
January	1	6.00
February	1	6.00
March	6	22.00
April	2	7.40
May	5	15.00
June	2	5.80
July	2	10.00
August	4	17.00
September	2	7.60
October	2	11.00
November	3	23.00
December	1	12.50
<b>TOTAL</b>	<b>31</b>	<b>11.03%</b> (% of 281 Total Admissions).

The total number of FAI which took place at  $\pm$  2 days of the full moon was 31. This data shows that only 11.03% of the FAI out of 281 patients took place on/or near about the 14th day of the moon: this is insignificant and becomes more so after keeping in mind that the majority of the cases occurred during the daytime: the day/night time ratio was 12.14 : 1.

### Cause of the Injury

Man is by nature a pugnacious creature but education has somehow subdued this inherent quality. Due to lack of education or boasted up pride, some people are notorious for short temperedness. They have been known to reach

for the gun at the slightest instigation. This tempted us to draw up a data for the cause of the injuries. The following are the results (Table VI) :-

TABLE VI  
CAUSE OF FIREARM INJURIES

Month of Year 1985	Fights	Accidents	Stray Bullet	Suicide
January	13	4	—	—
February	16	2	—	—
March	17	7	3	—
April	20	7	—	—
May	25	7	—	1
June	26	8	—	—
July	14	4	1	—
August	18	5	—	—
September	14	8	4	—
October	19	5	2	—
November	13	5	—	—
December	10	3	—	—
<b>TOTAL</b>	<b>205</b>	<b>65</b>	<b>10</b>	<b>1</b>
Percentage of 281	72.95%	23.13%	3.56%	0.35

The accurate data concerning stray bullets could not be collected because some of the injuries stated in the patients' histories as accidental were in fact due to stray bullets.

### Laparotomies with Their Findings

Table VII shows the total number of laparotomies and their findings. It can be asserted that about 99% of the cases, who were hit in the abdomen, were operated upon and found to have gastro-intestinal injuries. Following data concerns the patients who were operated upon for intra-abdominal injuries.

### Type of Weapon Used

The incidence of bullet wounds appeared to be more than the pellet wounds: the data about this could not be collected accurately. Although some

TABLE VII  
LAPAROTOMY FINDINGS

Month of Year 1985	Gastro-intestinal Injuries	Mesenteric Injuries	Kidney Injuries	Pancreas Injuries	IVC Injuries
Jan.	8	—	—	—	—
Feb.	12	—	—	—	—
March	15	—	—	—	—
April	8	—	—	—	1
May	10	1	—	—	—
June	19	3	—	—	—
July	5	—	—	—	—
Aug.	5	—	—	1	—
Sep.	10	—	2	—	—
Oct.	11	2	—	—	—
Nov.	9	—	—	—	—
Dec.	4	—	—	—	—
<b>TOTAL</b>	<b>120</b>	<b>6</b>	<b>2</b>	<b>1</b>	<b>1</b>
Percentage : out of 130	92.31%	4.61%	1.53%	0.76%	0.76%

The data about this could not be collected accurately. Although some judgement could have been made from the type of wound inflicted, yet this data would not have been accurate, therefore, it was abandoned.

### Site of the Body Shot

Keeping in mind the surface areas of the body, the site of the body which is most likely to be shot is the torso which includes the chest and the abdomen. Table VIII shows that the parts of body with larger surface area were hit more frequently, as the larger area is an easier target; abdomen, limbs and chest were hit in a decreasing order.

### Results of the Treatment

Until now the data presented and calculations carried out were out of 281 patients because detailed information about these patients was available. However the following data (Table IX) constitutes the end result of all the firearm injuries including even those patients who were not admitted in the wards. Thus the results presented in Table IX are for the total number of 368 patients received as FAI in the Casualty section of our Unit in the year 1985.



TABLE VIII  
SITE OF BODY INJURED

Month of Year 1985	Head	Abdomen	Chest	Limbs	Total
January	1	11	3	2	17
February	4	10	3	1	18
March	3	12	7	5	27
April	6	11	6	4	27
May	3	14	11	5	33
June	1	18	8	7	34
July	4	7	5	3	19
August	1	12	8	2	23
September	4	11	5	6	26
October	5	9	3	9	26
November	1	9	6	2	18
December	1	6	2	4	13
<b>TOTAL</b>	<b>34</b>	<b>130</b>	<b>67</b>	<b>50</b>	<b>281</b>
Percentage of 281	12.09%	46.26%	23.84%	17.79%	

TABLE IX  
RESULTS OF TREATMENT

Month of Year 1985	Discharged as Cured	Expired
January	16	1
February	22	2
March	33	3
April	32	3
May	33	3
June	38	3
July	28	3
August	31	4
September	27	0
October	37	4
November	21	1
December	23	0
<b>TOTAL</b>	<b>341</b>	<b>27</b>

Total number of patients discharged as cured	=	341 (92.66%)
Total number of patients expired	=	27 (2.33%)

### Percentage of the Firearm Injury Cases

Since 100 per cent of firearm injuries cases are received in the Casualty department, the percentage was calculated from the total number of admitted cases received in the casualty. The monthly break up of the emergency cases admitted in our Unit through Casualty section was as follows (Table X) :-

TABLE X  
PERCENTAGE OF F.A.I. CASES

Month of Year 1985	Total Number of Emergency Cases
January	295
February	277
March	246
April	340
May	339
June	360
July	424
August	382
September	455
October	305
November	283
December	321
<b>TOTAL</b>	<b>4027</b>

Thus the total number of emergency cases admitted in Surgical 'B' Unit through Casualty section	_____	=	4027
Total number of firearm injuries received through Casualty section	_____	=	368
The percentage of the patients received as firearm injuries		=	9.1 %

### Discussion

The firearm injuries have a pattern of increased and decreased incidence. It is higher in the summer months and during the month of Ramazan. This can be explained by the fact that the heat makes the temper hot and the people stay out in the open for longer periods. In the colder months, the life becomes more indoor and the temper becomes cold, thus the rate of incidence decreases.

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The parts of the body with larger surface area were hit more frequently: abdomen, limbs and chest in a decreasing order. The larger area is an easier target.

In the majority, the incidence of bullet (rifle) wounds was more than the pellet (shotgun) wounds, because the range of rifle is longer and that the rifle is thought (although wrongly) to be more lethal.

### **Conclusion**

The average age of the patients with firearm injury (F.A.I.) received in the wards of Surgical 'B' Unit, Lady Reading Hospital, Peshawar was 29.17 years and the male/female ratio was 4.5/1.

Majority of the F.A.I. cases occurred during the day time: the day/night ratio was 12.14/1. There was no correlation between F.A.I. and lunar dates. The F.A.I. incidence is higher in the summer months and during the month of Ramazan.

The maximum number of patients were received from Peshawar district (55.87%). The total number of F.A.I. from "fight" was 205 (72.95%); from accidents 65 (23.13%) and from stray bullets 10 (3.56%). The incidence of bullet (rifle) wounds was more than the (shotgun) pellet wounds.

The maximum injuries were abdominal (46.26%); next in order were chest (23.84%), limbs (17.79%) and head (12.09%). Ninety nine per cent of the abdominal F.A.I. were operated upon. The laparotomies showed injuries to G.I.T. (92.31%), mesentery (4.61%), kidney (1.53%), pancreas (0.76%) and I.V.C. (0.76%).

The total number of F.A.I. patients received in the Casualty section of Surgical 'B' Unit were 368 which is 9.1% of the total emergency cases admitted in this Unit through the Casualty department. Out of these 368 patients, the number of patients discharged as cured was 341 (92.66%) and those who expired were 27 (7.33%).