

**Original Article**

## Cause of death in exhumed bodies: An experience in upper Sindh, Pakistan

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### ABSTRACT

**Background:** - Exhumation is conducted around the globe when foul play is suspected. In developed world and in some developing countries this procedure is also carried out for identification purposes as well as in insurance claims, and some other civil suits.

**Objective:** To determine the cause of death in exhumed bodies.

**Study design:** Prospective, descriptive.

**Place & Duration of Study:** The Study was conducted in the department of Forensic Medicine, Chandka Medical College, Larkana (CMCL) from Jan:2001 to Dec:2010.

**Materials and Methods:** A total of 125 bodies were exhumed in various districts of upper Sindh by exhumation board, constituted by Director General Health Services Hyderabad. At the site of graveyard, bodies were dugged out. After identification of deceased by near relatives, the bodies were thoroughly examined, viscerae taken for histopathological and chemical analysis, and cause of death determined by consensus in almost all cases.

**Results:-** The most common cause of death was firearm injuries 37 (29.6%), followed by blunt trauma 15 (12%), sharp weapon injuries 09 (7.2%), drowning 09 (7.2%), poisoning 07 (5.6%) strangulation 06 (4.8%), infanticide 06 (4.8%). In about 1/3 of cases cause of death could not be decided due to advanced stage of decomposition.

**Conclusion:** Majority of victims were young males & firearm injury was the commonest cause of death.

**Key Words:** Exhumation, Cause of Death, firearm injuries

### INTRODUCTION

Exhumation is lawful disinterment of dead body or human remains from the grave or earth.<sup>1,2</sup> Dead bodies are buried in two general contexts, one is legally interred bodies in cemetery, while unlawful burials, being the act of person / gangs involved in concealing the heinous crimes, are found at some places other than cemetery.<sup>3</sup> Exhumation is performed mostly in criminal cases, but it is also conducted rarely in civil suits.<sup>3</sup> It is highly objectionable and illegal to disturb human remains without authorization of state machinery in every country<sup>4</sup>, except in Israel where it is completely forbidden by Jewish law.<sup>5</sup> Exhumation is unwelcome and highly charged issue particularly for family members and friends of deceased, hence utmost care should be taken during whole procedure to avoid law and order situation.<sup>1,6</sup> There are multiple purposes of exhumation, the prime being the determination of cause of death when foul play is suspected.<sup>7</sup> In these circumstance, it should be performed as early as possible before skeletonization of body, as clue about cause of death is inferred from soft tissues in majority of cases<sup>8</sup>, whereas exhumation, some times conducted for identification purpose through DNA test, can be undertaken even after centuries.<sup>9</sup> Movement from original grave to subsequently acquired family plot, repatriation overseas to be

buried along with other family members, shifting of graves en mass to another new graveyard when old one is required by State for some vital public projects are other rare purposes of exhumation in different countries.<sup>6</sup>

Although common perception is that main cause of death of deceased in exhumed bodies is due to violence and this has been supported by two studies done in Pakistan.<sup>2,10</sup> Hence this study was conducted in various districts of upper part of Sindh province to prove this hypothesis or otherwise because no such study has been done here before.

### MATERIALS AND METHODS

This was the prospective descriptive study conducted with the approval of ethical committee of Chandka Medical College Larkana (CMCL). A total of 125 bodies were exhumed in various districts of upper part of Sindh during the period of ten years from January 2001 to December 2010 by exhumation board constituted by Director General Health Services Sindh, comprising of Medical Superintendent as Chairman, Police surgeon, Forensic expert, Pathologist and Lady doctor in case of female bodies as members. All team members, accompanied by police escort under the supervision of Judicial Magistrate to control the emergency situation, used to reach the graveyard early in the

morning. Before starting the procedure of exhumation, consent, identification of grave, shroud, and body by heirs or near relatives were the mandatory requirements. The examination of the body was performed (both external and internal) which included the following protocol.

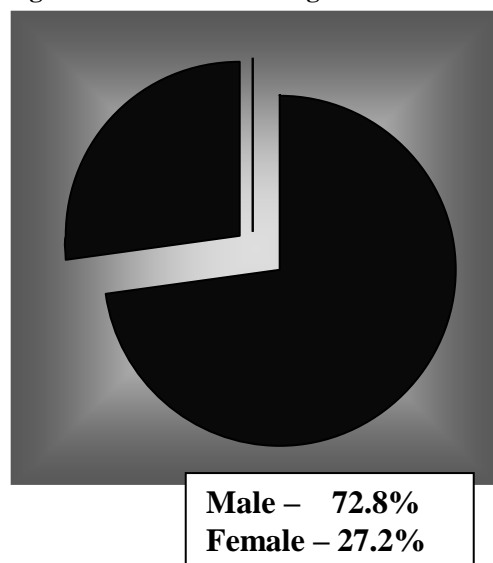
- Identification of sex from external appearance and in case of decomposition from bones.
- Age from teeth or from skull sutures.
- In case of firearm injuries, presence of bullets, pellets, wads, evidence of entry & exit wound.
- External & internal injuries were seen in the region of neck especially, hyoid bone status and cervical vertebral fractures in cases of compression to the neck.
- Collection of viscerae in 10% formalin for Histopathological examination.
- Collection of viscerae in normal saline for chemical examination in suspected poisoning.
- Collection of soil samples from different sites around the shroud of the body and distant from the grave as control in suspicious poisoning cases only.

The body was to be handed over to concerned authorities for reburial at the end of examination. After doing all above steps, opinion was formed regarding cause of death by the exhumation board based upon the examination of body, reports of Histopathologist and Chemical examiner. The board took unanimous decisions in almost all cases. Data was analyzed using Statistical Package for Social Sciences (SPSS) version 13.

## RESULTS

A total of 125 bodies were exhumed during the study period. There were 91 males (72.8%) and 34 females (27.2%), with a male / female ratio of 2.7:1 as shown in figure-1. The age ranged from 0-65years.

**Figure 1: Pie chart showing sex distribution**



The majority of bodies were in the 16-30 years age, representing 63.2% of study group, while ages of 8.0% bodies were in between 0-15 years (Table No.1). Regarding cause of death, in 37 (29.6%) bodies it was firearm injuries, while in about equal number of bodies, cause remained undecided. (Table-2). In all death causes, male gender outnumbered the females except infanticide where both sexes were in equal number (Table – 3)

**Table No. 1: showing age distribution (n=125)**

Age group	No.	Percentage
0 – 15 years	10	8%
16 – 30 years	79	63.2%
31 – 45 years	24	19.2%
46 – 65 years	12	9.6%
Total	125	100%

**Table No. 2: showing cause of death (n=125)**

Cause of death	No.	Percentage %
Fire-arm injuries	37	29.6%
Blunt Trauma	15	12%
Drowning	09	7.2%
Sharp weapon Injuries	09	7.2%
Poisoning	07	5.6%
Strangulation	06	4.8%
Infanticide	06	4.8%
Indeterminate	36	28.8%
Total	125	100%

## DISCUSSION

Mode of disposal of dead bodies in Pakistan is mostly burial as Muslims are in majority; hence requests for exhumation are more common as compared to India where cremation of corpse is the common practice.<sup>11</sup> In this study, all the 125 exhumations were of criminal nature, whereas in previous national studies, one conducted by Qazi et al,<sup>2</sup> and another by Hussain et al,<sup>10</sup> have also shown all exhumations, related to criminal cases. In our study, male victims were in majority, with male to female ratio of 2.7:1 whereas Qazi et al,<sup>2</sup> Hussain et al,<sup>10</sup> Grellner & Glenewinkel,<sup>12</sup> Kremer & Sauvageau,<sup>13</sup> have shown male female ratio as 2.5:1, 1.53:1, 2.83:1 & 2:1 respectively. The male predominance may be explained by their indulgence in violent activities and in the society women and children are usually spared.<sup>14, 15</sup> This Study showed the majority of cases in younger age group of 16-30 years (63.2%). Our results are similar as observed by Qazi et al,<sup>2</sup> who have also shown younger victims to be 62.8%. The predominance of younger age persons is also shown by Hussain et al

**Table No. 3: Cause of death, Sex wise distribution (n=125)**

Cause of Death									
	Fire-arm Injuries	Blunt Trauma	Sharp Weapon Injuries	Drowning	Strangulation	Infanticide	Poisoning	Undetermined	Total
Male	26	9	9	8	4	3	6	26	91
	11	6	0	1	2	3	1	10	34
Female	37	15	9	9	6	6	7	36	125

(41.8%).<sup>10</sup> However our results are in contrast to one study conducted in Canada<sup>13</sup> where majority of cases of exhumation are of older persons over the age of fifty. Involvement of younger persons of our sub-continent, in the productive and prime years of life is due to erratic, aggressive behavior and these persons are more vulnerable to fast changing social trends and culture patterns and they do not care of consequences in case of disputes<sup>14</sup>. In this study death of deceased had occurred by firearm injury in significant number of cases (29.6%). Our results are lower, as compared to study by Hussain et al<sup>10</sup> at Peshawar who reported firearm injury in 44.2% of cases as the cause of death. Firearm Fatalities are no doubt common in our upper part of Sindh, but even more common in Peshawar which is due to easy availability of deadly weapons without license and further more Pukhtuns keep the sophisticated weapons as a tradition.<sup>16</sup> In this study death due to violent acts other than firearm injury was seen in 41.6% of cases. This finding is in agreement with Hussain et al<sup>10</sup> who observed 39.5% of deaths due to these violent acts. Tribal feuds, matrimonial disputes, eloping of young girls for free will marriages leading to honor killing are the main reasons behind these fatalities in this region. In our study out of 125 cases, cause of death was established in 89 cases (71.2%), in remaining 36 cases (28.8%) cause could not be established. Failure to reach the cause of death in such a large number of cases in our study region is early putrefactive changes due to hot atmospheric temperature, water logging and salinity. The lengthy codal procedures, apathy of police, large number of pending cases in judiciary are also responsible for unnecessary delay and negative results.

## CONCLUSION

1. Firearm injury followed by blunt trauma, sharp weapon injuries due to violence constitutes the common cause of death in this study.
2. Majority of victims are young males

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