

## Analysis of Exhumations Carried Out in Three Divisions of Sindh

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### ABSTRACT

**Aim:** To determine the causes of death on exhumation in three divisions of Sindh, Pakistan

**Study Design:** Cross-sectional

**Place and Duration of Study:** Department of Pathology, Chandka Medical College, Larkana

**Methods:** 131 exhumations carried over 1 year were included in the study. In accordance with protocol, the graves were first identified and body was removed from it. Routine autopsy was carried out. Written consent for obtaining data was taken from the relatives present and a standard proforma was used to note findings. Samples for histopathology were also taken and cause of death was evaluated. After taking relevant information, the bodies were buried in accordance with the religious and cultural norms of the relatives. Data was entered and analyzed using SPSS 22.0.

**Results:** Males were more commonly exhumed. 21-40 years age group was most commonly involved. Most exhumations were carried out in Larkana. Most common weapon used was forced blunt trauma. Almost all bodies were at different stages of decomposition. We then observed the type of weapon/medium used. All 131 cases were of unnatural death. We observed that the most common weapon used was a hard blunt object (n=41; 31.29%), water causing drowning (n=34; 25.95%), sharp forced trauma (n=21; 16.03%) and strangulation (n=19; 14.50%) were commonly used. Whereas, the least commonly used were firearms (n=16; 12.21%). According to our observation, 57.25% (n=75) were partially decomposed, 40.45% (n=53) had advanced decomposition whereas 2.29% (n=3) had no decomposition at all.

**Practical Implication:** Analysis of exhumations is crucial for uncovering forensic evidence, resolving criminal cases, and providing closure to families. It helps ascertain causes of death, identify potential foul play, and contribute to the justice system's integrity. Additionally, exhumation analysis aids in refining investigative techniques and advancing forensic science.

**Conclusion:** We recommend exhumation when required be carried out in females as well. We also recommend early exhumation in cases of suspected foul-play. Our data may help in future planning of policies regarding exhumation.

**Keywords:** Exhumation; 3 Divisions of Sindh; Decomposition, Causes of Death, Drowning, Firearm Injuries, Weapon

### INTRODUCTION

Exhumation is a medicolegal procedure in which a buried body is removed from the grave under strict state-defined protocols.<sup>1</sup> The process and laws of exhumation vastly differ from country to country.<sup>2</sup> Religious beliefs and cultural barriers play a very important role in the smoothness as well as frequency of the procedure.<sup>3</sup> In Pakistan, it is carried out under the Criminal Procedures Code (CrPC) section 176. strict surveillance of a medicolegal officer with prior authorization of a Judicial Magistrate.<sup>4</sup>

Exhumation can be carried out for multiple reasons. These include determination of cause of death where foul-play is suspected, for identification of unidentified bodies and/or to determine the cause of death. It can also be carried out if relatives are not satisfied with an initial post-mortem report. In some cases, it is also carried out on bodies buried secretly to hide evidence.<sup>5</sup>

Mostly, exhumations are carried out when first degree relatives are in doubt that the first autopsy was in ambiguity. They need to file an application in the sessions court. If deemed necessary, the court then directs the Director General Health to formulate a Board of medicolegal experts. The process is then carried out under strict observation of the constituent board. If any of these steps is missing, the act is punishable under the law.<sup>6</sup>

The first step of exhumation involves grave identification which is done usually by the deceased's relatives. The grave is then dug up and coffin is identified. The body is then brought out and autopsy is performed. Samples are collected for histopathological as well as chemical analysis so that cause and time of death can be determined. The body is then put back in the grave which may either be the same or another depending on the situation. The is done keeping in mind religious and cultural beliefs.<sup>7,8</sup>

In Pakistan, there is no time-binding for autopsy. Thus, how much the body is decomposed at the time of exhumation becomes very important. With time, soft tissues of the body decompose more rapidly than bones.<sup>9,10</sup> As decomposition

advances, the signs of foul-play are also masked, for example certain poisons may fade out in tissues with time and become increasingly difficult to detect. Thus, the greater the time loss, the more the opinion will be based on hard tissues only.<sup>11</sup>

The decomposition of soft tissues greatly varies with type of soil buried in, cause of death and temperature of the local area.<sup>12</sup> The study of causes of death on exhumation in Pakistan holds significance as it addresses gaps in understanding the accuracy of initial death determinations and the effectiveness of forensic procedures. It can reveal discrepancies between initial diagnoses and actual causes of death, potentially influencing legal proceedings and ensuring justice. The research gap lies in the limited literature focusing on post-mortem changes specific to Pakistan's climate and culture, necessitating an investigation into the reliability of exhumation findings and the potential impact on legal outcomes. We carried out this study to evaluate the gender, age and location distribution of autopsies in 3 divisions of Sindh and also to evaluate the type of weapons more commonly used and the decomposition status of the bodies so that data for our region may be developed.

### METHODOLOGY

**Study Design:** Cross-sectional Study

**Study Population & Duration:** We included all autopsies carried out from 1st January, 2022 to 31st December, 2022 in Larkana, Kamber and Shikarpur divisions of the province of Sindh, Pakistan.

**Sample Size:** We were able to do 131 autopsies in different parts of these divisions during the aforementioned time period.

**Data Collection Procedure:** The study was approved by the Institutional Review Board of Chandka Medical College, Larkana, Sindh, Pakistan. All of these were carried out with proper documentation. In all cases, after court order, the DG Health formed a special medical board. By protocol, each time the members of the board gathered in the Police Surgeon's office after which they collectively travelled to the concerned police station

from where they were shifted to the area of burial which usually was a graveyard. Written consent for obtaining data was taken from the relatives present and a standard proforma was used to note findings. In accordance with protocol, the graves were first identified and body was removed from it. Routine autopsy was carried out. Samples for histopathology were also taken and cause of death was evaluated. After taking relevant information, the bodies were buried in accordance with the religious and cultural norms of the relatives.

**Data Analysis Plan:** Data was entered and analyzed using SPSS 22.0. Quantitative variables i.e. age, time of death were presented with Mean±S.D, while qualitative variables i.e. type of weapon, type of death, gender were presented with frequency and percentages. Chi-square test is applied. A p-value ≤0.05 is considered significant.

## RESULTS

In the designated study period, we carried out a total of 131 exhumations in three divisions. Out of these, 89 (67.93%) were on bodies of males whereas 42 (32.06%) were that of females as shown in Table 1. The researcher divided the subjects into 5 age groups namely less than 20 years, 21-30 years, 31-40 years, 41-50 years and above 50 years groups. We observed that the highest number of exhumed bodies belonged to the age group 21-30 years (n=47; 35.87%). The second most commonly affected age group was 31-40 years (n=31; 23.66%). These two age groups collectively accounted for more than half of the cases. The age groups lying at both extremities however, accounted for the least number of cases; 10.68% (n=14) for below 20 years and 12.21% (n=16) for above 50 years. The 41-50 year group occupied 17.55% (n=23) of the cases. (Table-2)

Next analyzed area-wise distribution of frequency of exhumations and observed that Larkana division was where just over half of the exhumations were carried out (n=67; 51.15%). The other two districts Kamber (n=35; 26.71%) and Shikarpur (n=29; 22.14%) did not have much difference between each other. We then observed the type of weapon/medium used. All 131 cases were of unnatural death. We observed that the most common weapon used was a hard blunt object (n=41; 31.29%). The second most common medium in death was water causing drowning (n=34; 25.95%). Sharp forced trauma (n=21; 16.03%) and strangulation (n=19; 14.50%) were the next most commonly used. Whereas, the least commonly used were firearms (n=16; 12.21%). (Table-4) According to our observation, 57.25% (n=75) were partially decomposed, 40.45% (n=53) had advanced decomposition whereas 2.29% (n=3) had no decomposition at all. (Table-5) It is worthwhile mentioning here that as decomposition advanced, it became harder for us to evaluate the cause of death.

Table-1: Showing gender wise distribution of exhumed bodies

| Distribution of cases according to gender (n = 131) |        |            |
|---|--------|------------|
| Gender  | Number | Percentage |
| Male  | 89     | 67.93      |
| Female  | 42     | 32.06      |

Table-2: Showing categorical age-wise distribution of exhumed bodies

| Distribution of cases according to the age (n = 131) |        |            |
|--|--------|------------|
| Age  | Number | Percentage |
| <20  | 14     | 10.68      |
| 21-30  | 47     | 35.87      |
| 31-40  | 31     | 23.66      |
| 41-50  | 23     | 17.55      |
| >51  | 16     | 12.21      |

Table-3: Represents location-wise frequency of exhumations.

| Distribution of cases according to Location (n = 131) |        |            |
|---|--------|------------|
| Division  | Number | Percentage |
| Larkana   | 67     | 51.15      |
| Kamber  | 35     | 26.71      |
| Shikarpur   | 29     | 22.14      |

Table-4: Depicts frequency of different weapons used.

| Distribution of cases according to the weapon used (n = 131) |        |            |
|--|--------|------------|
| Kind of Weapon   | Number | Percentage |
| Firearm  | 16     | 12.21      |
| Hard Blunt trauma  | 41     | 31.29      |
| Sharp force trauma   | 21     | 16.03      |
| Drowning   | 34     | 25.95      |
| Strangulation  | 19     | 14.50      |

Table-5: Shows the status of soft-tissue decomposition.

| Distribution of cases according to the condition of exhumation bodies (n = 131) |        |            |
|---|--------|------------|
| Exhumation Cases  | Number | Percentage |
| Partially decomposition   | 75     | 57.25      |
| Advance decomposition   | 53     | 40.45      |
| Without decomposition   | 03     | 2.29       |

## DISCUSSION

Exhumation is a medicolegal process through which a previously buried human body is evacuated from the grave for autopsy whether done before or not. The state of the body especially its soft tissues is of great importance in an accurate post-exhumation autopsy. The rate at which bodies decompose varies from region to region.<sup>13,14</sup> Unfortunately, the social and cultural practices in Pakistan and a slow legal system surmount to delayed exhumations hence, affecting the accuracy. In order to emphasize on the importance of exhumation in case of foul-play, we need to generate more data.

Out of total sample, 89 (67.93%) were on bodies of males whereas 42 (32.06%) were that of females. This proportion of male fatalities is consistent with the results of a nationwide research done by Rana et al. (2009) in Peshawar. Since women are held in high regard even by their opponents and are shielded from tribal and family disputes due to religious, cultural, and traditional norms, they account for a disproportionately small number of violent deaths in this community. More than half of the cases belonged to the age group between 21-40 year. This is similar to another study carried out in Pakistan by Awan et al. (2022) and may be explained by the fact that this age group is more involved in conflicts which leads to increased rates of unnatural deaths.<sup>15</sup>

Larkana division dominates in the number of exhumations when compared to Kamber and Shikarpur. This may also be explained by the fact that it is the more advanced of the other two divisions in terms of medical facilities as well as literacy rate.<sup>16</sup> Similar finding reported by Hussain et al. (2019), 71.5% of casualties were from rural areas and 28.5 percent were from urban areas, according to this survey.<sup>22</sup> Qazi et al. (2019) which is similar to ours, found that rural people were involved in 77% of their instances.<sup>23</sup>

The most common weapon used was forced blunt trauma followed by drowning, with strangulation, sharp trauma and firearms being less common. This data is similar to other third world countries and signifies the fact that most of these deaths may have occurred due to unplanned assault.<sup>17,18</sup> In contrast, Qazi et al. (2019) found that blunt head and chest traumas accounted for the majority of fatalities (71.9%).<sup>23</sup>

Finally, speaking of the most important aspect of this study we observed that more than half of the bodies exhumed were partially decomposed over 40% were in advanced decomposed state. This plays a very important role in determining the cause of death. With passing time, soft tissues necrosis and decomposition starts to set in which makes diagnosis more difficult.<sup>19,20</sup> In light of this finding, we strongly recommend early exhumation where foul-play is suspected.

Our culture generally avoids taking things seriously or approaching them scientifically. If there is reason to suspect murder, exhumation should begin immediately. Exhumation after a few days of burial can yield 90% of the findings. When our customs, police, and judicial institutions collaborate, it causes unnecessary delays and undesirable consequences. Similar doubts can be placed in laboratory reports. Those who are

committed can find bribes easily. The great majority of reports came from rural areas spread across several counties. This finding is suggestive of a greater incidence of criminal activity in rural areas than in metropolitan ones.

## CONCLUSION

In this study observed males being exhumed twice as much than females. Age groups 31-50 are the most commonly exhumed. The area where exhumation most commonly is performed is Larkana division. The most frequently used weapon is forced blunt trauma. And over 98% of the bodies are exhumed when decomposition has already started.

**Conflict of interest:** Nil

**Funding source:** Nil

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