Original Article

Disinterment & its Medico-legal Significance in Karachi

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ABSTRACT

Objective: To study different aspects of Exhumation which were conducted and autopsied in Karachi City.
Study Design: Retrospective study.
Place and Duration of Study: This study was conducted at the Departments of Forensic Medicine / Pathology, KMDC, Karachi and Liaquat College of Medicine & Dentistry, Karachi from January 2017 to December 2018.
Materials and Methods: Thirty-nine cases of exhumation were included which were overseen in two years study period. The data was collected with the permission of authorities. All the cases where cause of death was determined and other with undetermined cause of death were included in the study. Different variables e.g. age, sex, type of examination, manner of death, cause of death, time of burial and disinterment and condition of body were analyzed using SPSS Version 13.
Results: A total of 39 Exhumation were carried out during the study period of two years. Out of the total 20 were males (51.28%) and 19 females (48.71%), giving a male to female ratio of 1:0.95. In about 30 cases cause of death was established with certainty. Most frequent un-natural cause of death is asphyxia (46.15%) followed by hard and blunt trauma (10.25%), electrocution (7.69%), firearms (5.12%), sharp cutting-edge injury (2.56%), and poisoning (2.56%) respectively.
Conclusion: There is a need of DNA labs setup in different major cities so that the cases, especially for the identification purpose, will be declared and the results be seen on shortest possible time.

Key Words: Exhumation, Cause of death, Karachi.

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INTRODUCTION

Exhumation is a Latin word "ex" -out and "humus" – ground, that means out of ground or from the grave. So, exhumation is the lawful disinterment of a buried body from grave for autopsy[1]. Exhumation has been practiced since ancient times. Religion of Islam has its own scepticism regarding the exhumation and autopsies of dead bodies. The hadith by the Holy Prophet P.B.U.H proscribe the breaking or damaging the corpse or breaking the bones of the dead. They could not be permitted until there is certain duress directly related to any one of the five principles of the law called "Maqasid-al-shariat". These principles encompass protection of religion, life and health, progeny, intellect and wealth[2].

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Exhumation can either be primary or secondary. Primary examinations are those where bodies disposed after death are labelled as natural or un-natural, but afterwards the cynicism of foul play is embossed by the aggrieved party[3]. Secondary examinations or re-examination are those in which death investigation and autopsy exploration has been done before burial but on certain facts, the procedure of exhumation has to be carried out for an autopsy again[4]. Exhumation is an expensive, lengthened process and requires special official endorsement from legal authorities. Hence, it is practiced only when a certain need arises[5].

The most common reason for exhumation globally is medico-legal, i.e. if an individual die in suspicious circumstances, the police may request for the procedure in order to determine and resolve, majorly the cause of death, but there are other reasons also based on religion, culture social circumstances[6]. It may also be executed wholly for the identification of missing or abducted individuals[7]. Since the exhumation of deceased body or human remains can be very emotive and a perceptive issue, particularly for the relatives and friends of the deceased, it is necessary to act lawfully to ensure the health and safety of those involved in carrying out the exhumation and to curb the public health issues[8].

Success regarding cause of death depends upon condition of the corpse at the time of exhumation. Results also depend on the duration of the time lapse since death, when a soft tissue has been affected adversely by advanced decomposition, no definite

opinion about the cause of injury and whether it is ante-mortem or otherwise can be revealed with certitude[9]. Decomposition is not only a bar to successful examination, but it may also reduce the possibility of collecting and gleaning the samples and result in failure to enact the cause of death[10]. Discrete element influencing the decomposition are time elapsed between burial and exhumation, seasonal environment, soil conditions and coffin material[11].

This study analyzes the different aspects of the cases of exhumation or disinterment which were carried out and autopsied in Karachi during the study period.

MATERIALS AND METHODS

The study was conducted from January 2017 to December 2018. Thirty-nine cases of exhumation were included which were overseen in two years study period. The data was collected with the permission of authorities. All the cases where cause of death was determined and other with undetermined cause of death were included in the study. Different variables e.g. age, sex, type of examination, manner of death, cause of death, time of burial and disinterment and condition of body were analyzed using SPSS Version 13.

RESULTS

A total of 39 exhumations were ordered by the Judiciary during the two years study period from January 2017 to December 2018.

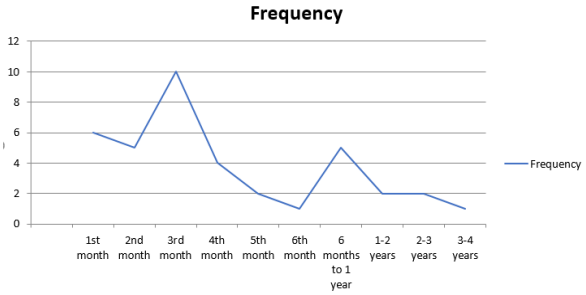
Time between the burial and the exhumation ranged from a month to 4 years. But most of the exhumations occur within first 6 months of the burial and very few occurred in later years (Table 1, Graph 1)

Out of a total of 39 bodies exhumed, 20 (51%) were of males and 19(49%) were of females (Table 2, Graph 2).

Table No.1: Frequency of time interval between Burial & Exhumation

Time between burial & exhumation	Frequency	Percentage
1st month	6	15.38
2nd month	5	12.82
3rd month	10	25.64
4th month	4	10.25
5th month	2	5.12
6th month	1	2.56
6 months to 1 year	5	12.82
1-2 years	2	5.12
2-3 years	2	5.12
3-4 years	1	2.56
Total	39	100.00

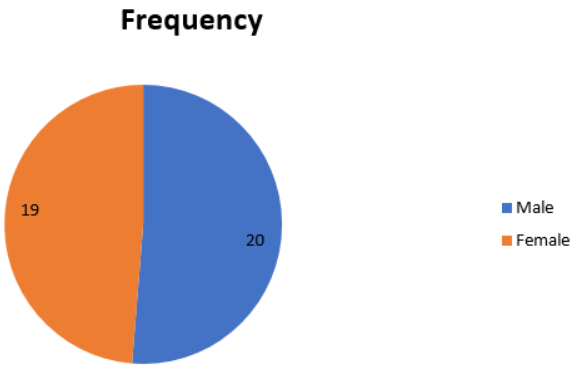
Primary examination in the period of two years study was carried out on 27 cases. The cause of death in 21 cases was affirmed while 6 remain undetermined. However, 12 underwent secondary examination with fortitude of cause of death in 9 exhumations and unclear in 3. (Table 3A, 3B & Graph 3A, 3B).



Graph No.1: Graphical Representation of Frequency of time interval between Burial & Exhumation

Table No.2: Frequency Distribution According to Sex

Sex	Frequency	Percentage
Male	20	51.28
Female	19	48.71
Total	39	100.00



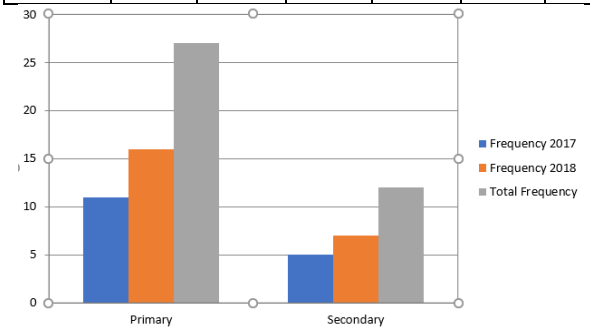
Graph No.2: Graphical Representation of Frequency According to Sex

Table No.3(A): Type of Examination

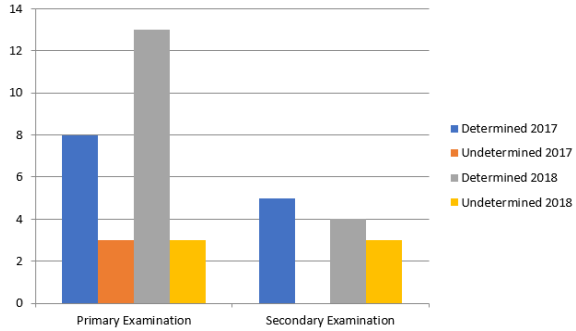
Examination	Frequency 2017	%age 2017	Frequency 2018	%age 2018	Total frequency	Total %age
Primary	11	68.75	16	69.56	27	69.23
Secondary	5	31.25	7	30.43	12	30.76
Total	16	100	23	100	39	100

Table 3(B): Frequency Distribution According to Determination of Cause of Death

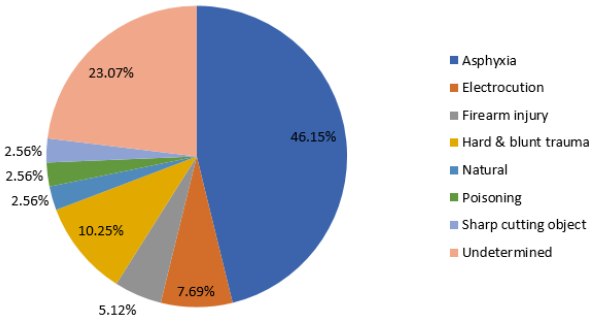
Cause of death	Frequency 2017	Percentage 2017	Frequency 2018	Percentage 2018	Total frequency	Total percentage
Primary Examination:						
Determined	8	72.73	13	81.25	21	77.77
Undetermined	3	27.27	3	18.75	6	22.22
Total	11	100	16	100	27	100
Secondary Examination:						
Determined	5	100	4	57.14	9	75
Undetermined	Nil		3	42.85	3	25
Total	5	100	7	100	12	100



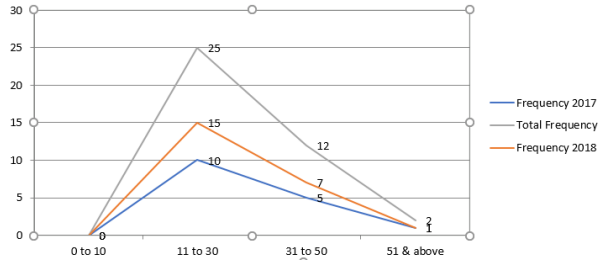
Graph No.3(A): Graphical Representation of Frequency of Type of Examination



Graph No.3(B): Graphical Representation of Frequency According to Determination of Death

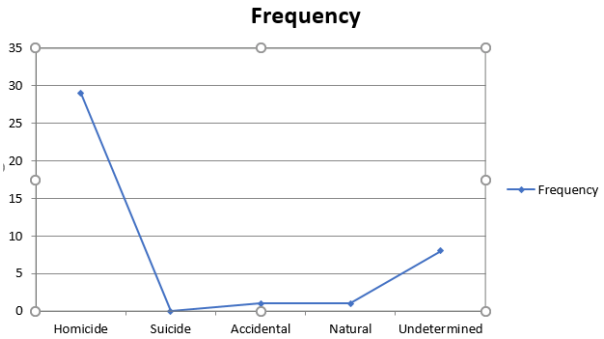


Graph No.4: Graphical Representation of Frequency According to Cause of Death



Graph No.5: Graphical Representation of Frequency Distribution According to Age

Generally, cause of death was determined in 30 cases (76.9 %) and remained undecided in 9 cases (23.1%). The established cause of death was asphyxia 12 (46.15%)followed by trauma4 (10.75%), electrocution3 (7.69%), firearm injury2 (5.12%), sharp cutting-edge injury1 (2.56%) and poisoning only 1 (2.56%)respectively. (Table 4, Graph 4)



Graph No.6: Graphical Representation of Frequency According to Manner of Death

Age distribution showed that majority of the body belonged to the age group 11-30 years (64.1%), supplant by age group 31-50 (30.7 %) and 51 years and above (5.1%). (Table 5, Graph 5)

Amidst determined manner of death we categorized as natural only 1 case (2.56%) and un-natural 30 cases (76.91%). Most of un-natural were of homicide 29(74.3%) and one of accidental (2.56%). Yet apart from these determined, we have 8 (20.5%) undetermined cases (Table 6, Graph 6).

Table No.4: Frequency Distribution According to Cause of Death

Cause of death	Frequency	Percentage
Asphyxia	18	46.15
Hard & blunt trauma	3	10.25
Electrocution	2	7.69
Firearm injury	4	5.12
Sharp Cutting Object	1	2.56
Poisoning	1	2.56
Natural	1	2.56
Undetermined	9	23.07
Total	39	100

Table No.5: Frequency Distribution According to Age

Age	Frequency 2017	Percentage 2017	Frequency 2018	Percentage 2018	Total Frequency	Total Percentage
0-10	Nil	0.00	Nil	0.00	0	0.00
11-30	10	62.5	15	65.2	25	64.1
31-50	5	31.2	7	30.4	12	30.7
51 & above	1	6.2	1	4.34	2	5.1
Total	16	100	23	100	39	100

Table No.6: Frequency Distribution According to Manner of Death

Manner of death	Frequency	Percentage
Homicide	28	71.79
Suicide	-	0.00
Accidental	1	2.56
Natural	1	2.56
Undetermined	9	23.07
Total	39	100.00

DISCUSSION

Exhumation is generally considered as degrading and culturally abhorred procedure by most civilization they bury their dead[12]. Despite all the barriers, procedure is carried out throughout the world due to reasons, most common among is the medico-legal reason including deceased individual who were not identified or misidentified at the time of interment[13].

Our research reported exhumation of 39 bodies in two years period from January 2017 to December 2018 with a frequency of about 19.5% exhumation per year.

A similar exercise by Mirza et al of 7 years and 7 months from Karachi reveals frequency of 13.4 exhumation per year[5]. A cogitation from Larkana and Sukkur districts reported 21 bodies exhumed and autopsied within a period of 3.5 years with a frequency of only six exhumations performed each year[14]. Qazi et al reported 35 cases in two years study period of 2004 and 2005[15].Thus a comparison showed comparatively somewhat more exhumations in Karachi which can be due to the fact that this city has urban areas where level of education and social awareness are higher than other so concerned persons of deceased are determined to find the cause of death.

Ammani et al also proclaimed in their study that 18 cases were done in Hyderabad(India) for a period of 3 years with a frequency of about 6 exhumations per year[16]. The international studies have also audited the different aspects of exhumed cases, a study from Ankara, Turkey reported a total of 52 cases of exhumation between 1996 and 2003[17].

As discussed in our study the cause of death was determined in 30 cases while remaining 9 cases stands undetermined with a significant success rate of 76.9%. This is higher than 74.3% success rate reported in Karachi by Mirza et al[5], but significantly higher than the 42.85% success rate reported in Larkana and Sukkur by Humayun et al[14]. Further, the success rate of first autopsy is 77.77% and that of secondary autopsy is 75% in our study. We can accomplish success rate at high by doing exhumation in early period as in our study most of the exhumations were carried out within 1-4 months of the interval time between burial and exhumation (Table 1, Graph 1). Achievement of high accomplishment rate also seen in the exhumation study by Mirza et al done majorly within 1-6 months[5].

In our study we observed that partial decomposition was seen in about 9 (23.07 %), advanced decomposition in 22 (56.4%) and 8 (20.5%) skeletonized body. However, no fresh body was exhumed. Negative Autopsy on exhumed body will be more when there will be delay in the Procedure.

As discussed by Awan R et al, success rate depends heavily on retrenchment, the delay between burial and disinterment[9]. Demirel et al also reported that the probability of ascertainment of cause highly depends on the time interval between burial and exhumation[17].During Putrefaction the possibility of the recognition of soft tissue injuries like abrasion, contusion and burns is relatively less[18].

Among the 30determined cause of death in our study we found 28 cases (71.7%) of homicide, only one (2.5%) of accidental but none of suicide and one (2.5%) of natural. (Table 6, Graph 6)

Ammani et al. showed 8(44.44%)homicidal and 3(16.66%) accidental cases and 1(5.55%) suicidal case in determined cause of death and 6(33.33%) were undetermined[16].

As showed in our study period, frequency distribution among determined cause of death were; asphyxia, hard and blunt trauma, electrocution, firearm injury, sharp cutting injury, poisoning and natural as 46.15%, 10.25%, 7.69%, 5.12%, 2.56%, 2.56%& 2.56% respectively. (Table 4, Graph 4)

Mirza et al reported male to female ratio of about 3:2 comprise the major fraction cases with the male (62.4%)[5]. Humayun et al reported male exhumation to be 4.25 times more preeminent than females in Larkana and Sukkur[14]. Qazi et al reported a similar 2.5:1 male female ratio of exhumed bodies in interior Sindh[15]. In our study we have seen that male to female ratio is 1:0.95 (Male=51.28% and female=48.71%) (Table 2, Graph 2). Males are mostly involved in minor and major conflicts so generally more liable to get involved in medico-legal issues leading to death especially by un-natural means.

Majority of the exhumed bodies by frequency distribution according to age of deceased in our study is 11-30 years (64.1%)followed by 31-50 years (30.7 %) and 51 years and above (5.1%) (Table 5, Graph 5). This is concurrence with the study Mirza et al. where 16-29 years (43.6%)followed by age group 30-49 years

(29.7%) and 51-59 (6.9%), reflecting the sensibility that youth suffers the violence most[5]. This also reflects in the study Humayun et al showing 1-15 years (4.76%), 16-30 years (71.42%), 31-45 years (14.28%) and 45-65 years (9.52%) respectively[14].

It is of extreme importance that in our study only 69.2% case samples were sent for chemical analysis and 30.7 % were not sent for analysis. Among the sent samples no positive result was received but 92.5% declare negative result and 7.4% case results still awaited.

For the purpose of Identification of deceased, samples were sent for DNA analysis in 20.5% where necessary but their results also awaited.

CONCLUSION

Exhumation is one of the important means of forensic investigation and should remain.

Delayed exhumation due to lengthy legal formalities in carrying out the proceedings leading to putrefaction/ decomposition results in a negative outcome. Legal Procedures may be simplified and abridged where possible so that exhumation can be performed as early as possible to evade putrefactive changes.

Decomposition due to climate, water logging, salinity and improper drainage of graveyard are the elements that can give a bar to ascertain the cause of death. So steps should be taken for the betterment to avoid these factors. Samples for analysis where necessary should be sent as early as possible in order to avoid putrefactive changes and specimen sent for analysis should follow up accordingly and results given by the labs should be speedy. There is a need of DNA labs setup in different major cities so that the cases, especially for the identification purpose, will be declared and the results be seen on shortest possible time.

Author's Contribution:

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Revisiting Critically:	Roohi Ehsan, Wasiq Ahmed
Final Approval of version:	Roohi Ehsan

Conflict of Interest: The study has no conflict of interest to declare by any author.

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