

Demographic and Forensic Profile of Unknown Bodies Brought for Autopsy at the Mortuary of Sir T. General Hospital, Bhavnagar

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Abstract

Introduction: The objective of this study was to investigate the demographic and forensic profile of unidentified dead bodies and to assess the current medico-legal situation in the Bhavnagar region of Gujarat, India.

Material and Methods: A retrospective descriptive study was conducted on 104 cases of unknown dead bodies brought for postmortem examination at Sir T. General Hospital and Government Medical College, Bhavnagar, during the period from April 2010 to March 2013.

Observation: study shows most cases involved elderly males, with natural causes being the predominant cause of death, followed by injury-related deaths. Tattoos and items found on or within the body were the most common identifying features. Despite various identification efforts like preserving clothing, photography, and fingerprinting only 24.04% of the bodies were successfully identified.

Conclusion: Despite various identification methods, a majority (75.96%) remained unidentified. The findings emphasize the need for improved and timely identification procedures, use of modern forensic tools, and better coordination between forensic teams and law enforcement to enhance the identification and investigation process.

Keywords: Unknown dead bodies, Identification, Bhavnagar.

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Introduction

India, with a population of approximately 1.27 billion, is a culturally and ethnically diverse nation. The state of Gujarat accounts for over 6.27 crore residents, while the city of Bhavnagar has an estimated population of 28.77 lakh. [1] According to national statistics, the country's death rate is 7.43 per 1,000 population, attributed to both natural and unnatural causes. [2]

Identification of deceased individuals is a fundamental aspect of forensic investigations—not only for legal and criminal purposes, but also to fulfil important ethical and civil responsibilities. Accurate identification enables proper funeral rites, issuance of death certificates, and resolution of civil matters such as inheritance and insurance claims.

From a medicolegal perspective, identification refers to the determination of a person's individuality based on distinct physical characteristics or the establishment of their identity.

The identification of cadavers is a critical component of any forensic investigation, holding equal importance across ethical, legal, and civil domains.

Every individual has the right to be cremated or buried with dignity, and families deserve the opportunity to mourn their loved ones. Without proper identification, essential civil procedures—including the issuance of death certificates—cannot be completed. These certificates serve as the legal basis for arranging funerals, executing wills, accessing life insurance benefits, and settling inheritance matters. Therefore, concluding a postmortem examination necessitates the establishment of identity to ensure legal and humanitarian closure. [3,4,5,6,7,8,9]

The management of human remains presents a significant challenge in the aftermath of large-scale natural disasters, particularly during the initial phases of relief and rescue operations. This task

becomes even more complex in the absence of standardized technical guidelines or coordinated protocols. Poor handling and mismanagement of human remains can lead to serious consequences, including heightened psychological trauma for survivors and a host of legal complications related to inheritance, compensation, and insurance claims. [10] Therefore, research on unidentified dead bodies is essential to understand their demographic characteristics, determine causes of death, and enhance identification methods through forensic and investigative approaches.

Material and Methods

The materials for the present study consisted of 104 autopsy cases, selected from a total of 3,436 medicolegal autopsies conducted at the Department

of Forensic Medicine and Toxicology, Government Medical College and Sir T. General Hospital, Bhavnagar, between April 2010 and March 2013. Cases were identified using the Bhavnagar Medico-Legal Autopsy Admission Register, from which specific data relevant to the study were retrieved. Additionally, individual case files were reviewed to collect detailed information for each case. The gathered data were systematically recorded on data capture sheets to facilitate comprehensive collection and subsequent analysis.

In medicolegal autopsies, consent is not required, and the autopsy surgeon is authorized to remove any part or specimen from the cadaver deemed necessary for the purposes of examination.

Observation

Table 1: Distribution of cases of unknown dead bodies according to data found for identification

Identification Features	No. of Cases	Percentage (%)
Scars/Moles	7	6.73
Tattoo Marks	28	26.92
Deformity	1	0.96
Things Found Within Body	21	20.19
Unique Feature	1	0.96
Total	58	55.76

In the present study, as per table no 1 identifying features like Scar/Mole (6.73%), Tattoo Marks (26.92%), any Deformity (0.96%), things found within body (20.19%) and Unique features (0.96%) were found over/ within the dead body, which could possibly assist in obtaining the identity.

Table 2: Distribution of cases of unknown dead bodies according to injuries found over the body

Type of Injury	No. of Cases	Percentage (%)
Abrasion	17	16.34
Contusion	8	7.69
Laceration	15	14.42
Incised/Chop/Stab Wound	7	6.73
Mixed (Fracture/Crushed)	22	21.15
Hanging /Strangulation	4	3.84
Burns/Electrocution	2	1.92
Firearm Injury	0	0
Others (Gnawing)	13	12.5

In the present study of total 104 unknown dead bodies, as per table no 2 46 cases (44.23%) show bodily injury/injuries (ante mortem/ postmortem). In our study, some of the cases were showing more than one ante mortem/ postmortem injuries and it was accordingly calculated.

Out of these majority of cases were showed mixed type of injury (21.15%), followed by abrasion (16.34%), laceration (14.42%), contusion (7.69%), incised/chop/stab injuries (6.73%), hanging/strangulation (3.84%), burns and electrocution (1.92%), while gnawing effect (postmortem injuries) seen in 13% cases in decomposed dead bodies.

There was no any firearm fatality in our study. In our study of total 104 unidentified dead bodies, in

44 cases (42.30%) cause of death was given immediately after autopsy and no further investigations were suggested for identification or cause of death, because those dead bodies were either of beggars (no relatives found as per police investigation) or were identified during or immediately after autopsy as well as they had gross findings that reveal cause of death.

As per table no 3 In the remaining 60 cases (57.70%) various investigations suggested for finding cause of death and for identification.

In some of the cases, autopsy surgeons were suggested/ done more than one investigation for finding the cause of death or for the purpose of identification and they were accordingly calculated. Chemical Analysis was suggested in 44.23% cases;

Diatom Test were suggested in 16.34% cases. DNA analyses were suggested in 34.61% cases for purpose of identification. Histo-pathological examinations were suggested in 17.30% cases; Microbiological examinations were suggested in

7.69% cases for the purpose of cause of death. Other investigations suggested like semen analysis (by preparing and preserving related swabs and slides) in alleged rape cases, superimposition and clothes examination in 22.11% cases.

Table 3: Distribution of cases of unknown dead bodies according to laboratory test suggested for finding cause of death & for identification

Test	No. of cases	Percentage (%)
Chemical analysis	46	44.23
Diatom test	17	16.34
DNA profile	36	34.61
Others	23	22.11
Histopathology	18	17.30
Microbiology	8	7.69

As per table no 4 in our study of 104 unidentified dead bodies, the major cause of death determined after autopsy was natural causes, accounting for 47.11% of cases. These included conditions such as coronary artery disease, tuberculosis, dehydration, starvation, heat stroke, gangrene, lung pathology, and peptic perforation. Following this, accidental,

suicidal, and homicidal injuries collectively comprised 22.12% of cases, involving head injuries, chest injuries, crush injuries, multiple traumas, and decapitation. Asphyxial deaths, including those caused by hanging and drowning, accounted for 7.69%, while burns and poisoning each represented 1.93% of cases.

Table 4: Distribution of cases of unknown dead bodies according to cause of death

Cause of death	No. of cases	Percentage (%)
Coronary artery Disease	21	20.19
Tuberculosis	10	9.62
Starvation	3	2.88
Dehydration	2	1.93
Heat stroke	2	1.93
Gangrene	4	3.84
Lung pathology	6	5.76
Peptic perforation	1	0.96
Head injury	9	8.66
Chest injury	3	2.88
Crush Injury	3	2.88
Multiple injury	6	5.77
Decapitation	2	1.93
Drowning	5	4.81
Hanging	3	2.88
Poisoning	2	1.93
Burns	2	1.93
Foetal Death	5	4.80
Undetermined	11	10.58
Not opined	4	3.84
Total	104	100

In 10.58% of cases, the cause of death remained undetermined due to advanced decomposition and skeletonization.

Additionally, 3.84% of cases were inconclusive with no opinion given on the cause of death, and another 3.84% involved foetal deaths. As per table no 5 in present study of 104 unidentified dead bodies, various efforts were done by the respective police department and by the autopsy surgeon for the purpose of identification as per the case. In

some of the cases, more than one efforts / technique was used for the purpose of identification and they were accordingly calculated.

Clothes of the deceased were preserved in 97 (93.26%) cases, Photography in 83 cases (79.80%), Advertisement in newspapers/ media in 84 cases (80.76%), Fingerprints in 54 cases (51.92%), DNA analysis in 31 (29.80%) cases, Superimposition in 3 cases (2.88%) and X-rays in 1 case (0.96%) were done/ suggested.

Table 5: Distribution of cases technique used for identification

Efforts Made/ Advice Given	Cases	Percentage (%)
Finger Prints	54	51.92
Photography	83	79.80
Advertisement	84	80.76
Clothes	97	93.26
Superimposition	3	2.88
DNA analysis	31	29.80
X-ray taken	1	0.96

As per table no 6 In the present study of unidentified dead bodies, 24.04% cases were identified afterwards by various efforts done by investigating officer and autopsy surgeon, while 75.96% cases were remained unidentified due advance decomposition, skeletonization and due to other issues.

Table 6: Distribution of cases of unknown dead bodies according to body identified/ unidentified after the efforts

Identified/ Unidentified	No. of cases	Percentage (%)
Unidentified	79	75.96
Identified	25	24.04

Discussion

Comparison of unknown dead body cases according to cause of death: In one year, study of Ajay Kumar at al Chandigarh of unidentified dead body cases, majority of opinion regarding the cause of death were "Opinion reserved" (37%) for want of the reports of the toxicological and histopathological analysis of the viscera sent for the same to the concerned quarters. This group was followed by "Head Injury" (26%) cases. Haemorrhagic shock and multiple fractures accounted for 2 cases each (11%). According to him, mechanical trauma was the principal cause of death, which is because of vehicular or rail accidents. [11]

In 3 years, study of Lucinda Evert at Pretoria of South Africa, of unknown dead body cases, the major causes of death that could be identified were motor vehicle accidents including driver, passenger and pedestrian accidents (21%), abortion or still birth (20%), assault with either sharp or blunt instrument (12%), natural causes (11%), firearm fatalities (4%) and Asphaxial deaths (4%) which included hanging and drowning.

All other causes of death such as poisoning were group together and comprised 12% of all cases. In 16% of cases no cause of death could be established at autopsy. About firearm fatalities, according to her law considering the violent climate of South Africa & the fact that illegal guns are readily available. About abortion or still birth, according to her majority of them are non-viable & they are usually dump in trash cans or at the dumping sites. [12]

In our 3 years study of unidentified dead body cases, the major cause of death that could be revealed were natural cause (47.11%) including coronary artery disease, tuberculosis, dehydration,

starvation, heat stroke, gangrene, lung pathology, and peptic perforation. Those because of beggars and persons suddenly died due to disease and were brought as unknown person. This was followed by death due to various bodily injuries (head, chest, crush, multiple & decapitation) (22.12%). That is because of majority of cases were found on/ side of road suggestive of road traffic accidents, as well as injuries may be due to an assault. Other causes of death were Asphaxial death (7.69%) that includes hanging & drowning, Foetal death (3.84%), Burns (1.93%) and Poisoning (1.93%). In our study 4.8% cases remained undetermined cause of death, while in 10.58% cases, cause of death was not opined due to non-availability of various investigation up till now.

From comparison of above three studies, some differences about the cause of death were seen in unidentified dead bodies.

Comparison of unknown dead body cases according to efforts made to established identity: In one year study of Ajay Kumar at al Chandigarh of unidentified dead body cases, the police photographed and published "Hue and Cry/ Missing persons" notice in dailies in all the cases. They had, however, taken fingerprints in 40% cases only. The doctor conducting the autopsy had handed over clothes in all the cases (to facilitate the process of identification) because many a times identification is based on personal artefacts of the victim & it may be only means of identification by the relatives, finger pulps of all the ten fingers in separate sealed packets in 26% cases, noted the marks of identification/ deformities/ tattoos in 26% cases because relatives easily recognized the tattoos on the person of their near or dear ones & in these cases even the description of tattoos help in identification and preserved sternum for DNA

analysis/ blood for cross matching in 5% cases, on the request of the investigating officer. [11]

In 3 years, study of Lucinda Evert at Pretoria of South Africa of unidentified dead body cases, special identifying features which could assist in the identification of unidentified individuals were recorded in 282 (33%) of cases. In 66% of cases no special identifying features could be found. Special identifying features recorded included scars (42%), a beard or moustache (32%), tattoos (22%), dentures, dental work or any dental condition or deformity (16%), distinguishing jewellery (4%), body deformities (3%), skin discoloration including birth marks (3%), implanted medical devices (1%), piercing (0.2%), moles (0.1%), previously fractured bones (0.1%) as well as documents (0.1%) which could possibly assist in obtaining the identity of deceased. In 16% of cases no unique identifying feature were recorded which could be used to aid in the identification of the deceased individual. 12

In our 3 years study of unidentified dead body cases, identifying feature were found on/ within the dead body like, scar or mole in 6.73% cases, various tattoo mark in 26.92% cases, because of people in Bhavnagar region are very much fond of tattoo marks (permanent/ temporary) and also were having tattoos due to religious beliefs. Any material or things like jewellery/mobile/sacred thread/any papers in 20.19% cases, deformity and unique features in 0.96% of each. Dental charts were noted in all cases. Clothes were preserved in 93.26% cases to facilitate the identification, sternum bone and/ or molar teeth and/ or any other bone were preserved for DNA analysis in 29.80 % cases.

From comparison of above three studies, some differences were seen in various procedures suggested/ done for the purpose identification.

Comparison of unknown dead body cases according to investigations used: In one year study of Ajay Kumar at Chandigarh of unidentified dead body cases, viscera for both histopathology and chemical analysis, was sent in 21% cases, for histopathology alone, in 16% cases for finding the cause of death. [11]

In 3 years study of Lucinda Evert at Pretoria of South Africa; majority of unknown dead body cases, special investigations included the determination of the blood alcohol level of the deceased, the taking of histological samples for microscopic diagnosis of disease and taking of samples for toxicological analysis. Blood alcohol concentration determination was performed in 411 (48%) of the 848 cases. Histological specimens were retained in 12% of cases and toxicological analysis performed in 6% of cases. In 337 (44%) of cases no special investigation was performed for finding the cause of death. [12] In our 3 years study

of 104 unidentified dead body cases, viscera were preserved for chemical analysis in 46 cases (44.23%) for finding cause of death; any bone (commonly sternum) was preserved for diatom test in 17 cases (16.34%) because these bodies were recovered from the source of water. Others tests include preparing & preserving swabs and slides in alleged rape cases and skull with mandible for superimposition for identification in 22.11% cases. Clothes were preserved for the purpose of identification in 93.26% cases. Histopathological specimens for finding the disease which might cause the death were retained in 17.30% cases. Microbiological examinations for finding the organism which might cause the death were suggested in 7.69% cases.

From comparison of above three studies, it was seen that Histo- pathological examination were done in nearly similar no. of cases in all the studies, while rest of the investigations were showed some differences.

We were tried to search printed as well as electronic research work regarding autopsy cases of unidentified dead bodies for purpose of comparison of various data, but we could not find some of the following data for comparison:

Distribution of cases of unknown dead body according to the status of the body like fresh, decomposed or in skeletonised state. In our study, maximum cases of unidentified dead body were brought in fresh state (74.04%), followed by decomposed state (23.08%) followed by state of skeletonization (2.88%). That is because of cases of unidentified dead body found on road/ sides of the road were more in number in our study. That mostly suggested of road traffic accident cases and those cases were probably unidentified at the time of treatment as well as during autopsy. While decomposed and skeletonised dead bodies were found mostly in summer season due to very hot & humid environment in Bhavnagar region.

Distribution of cases of unknown dead body according to the injuries (ante mortem/ postmortem) found over the dead body like mechanical injury, asphyxial death, burns/ electrocution or post mortem injuries. In our study, maximum cases of unidentified dead body were seen mixed injuries over the body (21.15%) because mainly due to road traffic accidents, followed by having abrasion (16.34%), laceration (14.42%), gnawing effect (post mortem injury) due to eaten the body by various animals (12.5%), contusion (7.69%), incised/ chop/stab wound mainly due to assault (6.73%), hanging & strangulation (3.84%), burns & electrocution (1.92%). Distribution of cases of unknown dead body according to the dead body identified or not after all the efforts. In our study, 24.04% cases

were identified during or after the autopsy by various efforts made by the autopsy surgeon and/ or investigative police officer. While 75.96% cases remained unidentified even after various efforts made by the autopsy surgeon and/ or investigative police officer. That is because of advanced decomposition/ skeletonization with no presence of identification features or due to non-availability of any records for identification of those dead bodies.

Conclusion

In our 3 years study of 104 autopsy cases of unidentified dead body, maximum no. of cases was seen having tattoo marks (26.92%), followed by things found within the body (20.19%) as an identification data. In our 3 years study of 104 autopsy cases of unidentified dead body, among the injury, maximum no. of mixed injuries (21.15%), followed by abrasion (16.34%) were found over the body. In our 3 years study of 104 autopsy cases of unidentified dead body, investigations suggested to find out cause of death, chemical analysis were outnumbered in majority of cases (44.23%), followed by Diatom Test (16.34%).

While histopathological examination (17.30%) & microbiological examination (7.69%) was suggested in fewer cases. In our 3 years study of 104 autopsy cases of unidentified dead body, maximum no. of cases died due to some natural cause (47.11%), which is followed by death due to injuries (22.12%). While 10.58% cases were showed undetermined cause of death, in 3.84% cases cause of death was not opined up till now & 4.80% cases were of foetal death.

In our 3 years study of 104 autopsy cases of unidentified dead body, clothes of the deceased were preserved in most of the cases (93.26%), followed by Advertisement in newspaper/ media (80.76%) & Photography (79.80%). While Fingerprints were taken in 54 cases (51.92%), blood/ bone/ tissues were preserved for DNA analysis in 31 (29.80%) cases, skull bone with/ without mandible were preserved for Superimposition in 3 cases (2.88%) and X-rays were taken in 1 case (0.96%). In our 3 years study of 104 autopsy cases of unidentified dead body, 24.04% cases were identified during/ after the autopsy by various efforts made by autopsy surgeon & police department. While 75.96% cases remained unidentified even after various efforts made by autopsy surgeon & police department.

Suggestions

From the present study, following suggestions are derived.

- Efforts made for identification of the unidentified dead bodies need to be increased by the Police Department.

- Bodies that are unknown/ unclaimed/ unidentified should be presented for autopsy without any delay so that decomposition and other artifacts do not set in and obscure the findings of the postmortem examination, particularly those that might throw some light as regards of identification. Thus, valuable data regarding the cause and manner of death can be established, besides data regarding identification.
- Modern techniques are to be used for the purpose of identification.
- Workload of the police officers needs to be redistributed, and accountability of the police has to be fixed to get the body identified. Simple colour photography of the body, especially of the clothes, the tattoo marks, scars, deformities, etc. will help the police in identifying such bodies.
- Maintaining dental records of the deceased may also helpful. Whole body radiographs may be useful for establishing the identity, which may reveal an old fracture or an implant (in the presence of a surgical orthopaedic scar).
- DNA analysis and fingerprinting should be done in each and every case so that proper records will be there for identification of the deceased years after the death or postmortem. With a little effort on the part of the doctor and the investigation officer, in many cases, surprisingly, a large amount of information can be obtained even in the presence of advanced state of decomposition. Such information can be of use to the doctor and the investigation agencies both in establishing identity and in forming an opinion about the cause and manner of death.
- Like AADHAR CARD, which was the scheme implemented by Govt. of India for the identification purpose of residents of India, likewise some scheme similar to that will also be implemented by the Home Dept. & Police Dept. for easy identification of the unknown/ unclaimed/ unidentified dead bodies. And for that all the relevant digital data related to the identification must be interlinked with all the police stations. [13]

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