Original Article

Study of Unknown Dead Bodies Brought for Post Mortem in Tertiary Hospital

Tajbir Kaur[1], Akash Deep Aggarwal[2], Didar Singh Walia[3], Preetinder Singh Chahal[4], Satinder Pal Singh[5]

[1]Junior resident, [2]Professor and Head, [3]Associate Professor, [4]Associate Professor, [5]Assistant Professor, Department of Forensic Medicine & Toxicology, Govt. Medical College, Patiala, Punjab, India.

How to cite this article: Tajbir Kaur, Akash Deep Aggarwal, Didar Singh Walia et. al. Study of Unknown Dead Bodies Brought for Post Mortem in Tertiary Hospital. Indian Journal of Forensic Medicine and Toxicology/ Volume 19 No. 1, January - March 2025.

Abstract

Introduction: Medico legal autopsies are conducted in India in two circumstances: cases where a person has died because of unnatural circumstances and where the body of the deceased is unidentified. The present study relates to the latter of the two aforementioned circumstances, i.e. where the dead body is not identified.

Aims and material: In present descriptive prospective study the size and magnitude of problems regarding unidentified bodies. Also the profile of unidentified dead bodies such as age, cause of death, post-mortem interval, manner of death, seasonal trends, area (urban or rural), place from where the body was recovered was studied

Results: Total 1919 bodies were brought to us of which 169 cases were selected after exclusion criteria. The mean age of the patients was found to be 44.82±14.83 years with male predominance. Most of the cases were identified on the basis of the clothes belonging and 16.57% bodies were brought from the rural areas. Majority of the unidentified bodies were found in the autumn season (28.99 %). Maximum unidentified dead bodies were discovered at religious places (n= 64, 37.87 %). In the present study, most deaths were natural(n=114 (67.46 %) and the majority of autopsies were performed between 4 and 6 days (n= 73, 43.20%) .There were the most cases of illness/ diseased condition (n=55,32.5%).

Conclusion: Unknown/unclaimed should be presented for autopsy forthwith without any delay so that decomposition and other artifacts do not set in and obscure the findings of the postmortem examination can be avoided.

Keywords: Autopsy, Dead Bodies, Forensic, Post- Mortem, Unknown

Introduction

As the worldwide population and that of the developing Indian subcontinent are on the rise, a part of this growth is contributed by individuals migrating from different states seeking employment, among other reasons. Tragically, some of these individuals

Corresponding Author: Preetinder Singh Chahal, Associate Professor, Department of Forensic Medicine & Toxicology, Govt. Medical College, Patiala, Punjab, India.

E-mail: preetinder1chahal@gmail.com

Submission date: August 27, 2024 **Revision date:** October 9, 2024 **Published date:December 3,2024**

succumb to unfortunate circumstances, and their identification process begins under a police inquest, with an autopsy surgeon and a forensic scientist playing significant roles.[1]

In India, post-mortem examinations are often performed in government hospitals, by trained forensic medicine experts who work closely with law enforcement agencies to provide vital information for investigations.[2] Two main scenarios necessitate examination of unknown dead bodies in India: deaths resulting from unnatural circumstances and cases where the body is unidentified. The process of identifying these bodies involves examining physical characteristics and other identifying markers such as fingerprints, scars, tattoos, and dental records. DNA profiling and bone analysis are also employed, particularly when the body is decomposed or mutilated. In recent years, the use of more advanced techniques like facial reconstruction and isotopic analysis has also been reported in the literature.[3]

The medico-legal autopsies of unknown bodies not only help in criminal investigations, but they also provide valuable epidemiological data about accidental deaths, suicides, and homicides, which can guide public health policies and interventions.[4] While trying to establish the cause of death of an unknown body, the forensic experts also consider the geographical surroundings or circumstances in which the dead body was found.

The primary aim of this study is to assess the size and magnitude of the issue related to unidentified bodies, while providing a comprehensive profile of the unidentified dead bodies based on factors such as: determining if certain age groups are more vulnerable; common causes of death; time gap to discovery; manner of death; seasonal variation; any rural-urban divide; place where the bodies are most often recovered, etc. This study stands apart from others in the field due to its multi-faceted approach. While earlier research may have focused on singular aspects like the forensic identification process or geographic profiling, this study combines multiple variables to create a holistic profile of unidentified bodies. In this way, the study not only fills gaps in existing literature but also aims to provide data that can influence policy decisions and preventive measures.

Materials and Methods

The present descriptive cross sectional study was conducted for the period of 2 years at department of Forensic Medicine & Toxicology. Total 1919 bodies were brought for autopsy of which sample size of 169 cases of unknown bodies was selected.

The study included:

1. Cases of unknown bodies brought for post mortem

It excluded:

1. Dead bodies that were identified before or at the time of autopsy.

In this investigation, police inquest papers, panchnamas and, hospital records were closely examined. Photographs were taken to document findings, age, sex, cause and manner of death, area (urban or rural) from where the body was brought, seasonal trends were analyzed. External body examination included fingerprints, tattoos, anomalies, and scars. DNA samples and fingerprints were retained upon request.[5] After reviewing post-mortem, chemical, and histopathological data, the cause of death was determined. All case proformas were compiled. The data was statistically analyzed.

Results

During the two-year period of the study, a total of 169 cadavers with a dubious identity or unidentified have been autopsied in the department. These formed 8.80 % of total 1919 autopsies performed. Out of 169 unidentified cases, males comprised of 155 in number and 14 were females. The mean age of the patients was 44.82±14.83 years (Table 1).

Table 1: Table showing distribution of cases in reference to age and sex.

Age Group (Years)	Female		Male		Total	
	n	%	N	%	n	%
<1 Years	2	14.29%	2	1.29%	4	2.37%
1-10 Years	0	0%	2	1.29%	2	1.18%
11-20 Years	2	14.29%	0	0%	2	1.18%
21-30 Years	3	21.43%	13	8.39%	16	9.47%
31-40 Years	2	14.29%	41	26.45%	43	25.44%
41-50 Years	2	14.29%	47	30.32%	49	28.99%
51-60 Years	1	7.14%	33	21.29%	34	20.12%
≥61 Years	2	14.29%	17	10.97%	19	11.24%
Total	14	100%	155	100%	169	100%
Mean±SD	32.64±21.75		45.88±13.67		44.82±14.83	
Median	28.50		45.00		45.00	
Range	7 Months - 70 Years		7 Intra Uterine Month -75 Years		7 Intra Uterine Month -75 Years	
χ^2	37.547					
p value	0.001					

Most of the cases were identified on the basis of the clothes belonging to the cases, n= 158 (93.49 %). (Table 2) It was found out that 16.57% bodies were brought from the rural areas in which more were males (n=24).

Majority of the unidentified bodies were found in the autumn season (28.99 %) followed by the summer season (23.67 %) monsoon and winter season (15.38%). Maximum unidentified dead bodies were discovered at religious places (n= 64, 37.87 %) like temple or gurudwara, followed by 28 cases recovered from the water bodies/drowning (n= 28, 16.57). In the present study, most deaths were natural, n=114 (67.46 %) and the majority of autopsies were performed between 4 and 6 days (n= 73, 43.20%) (Table 2)Regarding the cause of death according to police records in the present study, it was determined that there were the most cases of illness/ diseased condition (n=55) (Table 2)

According to post-mortem multi-organ failure was the leading cause of death (n= 67, 39.64%), followed by injury (n= 29, 17.16%). In the majority of these 169 cases, photographs (49.11%) were used for identification, followed by scar impressions (20.71%) and tattoos (2.91%). In 1.18% of instances, moles were utilized. (Table 2).

Table 2: Shows various parameters studied in the present study

Variables		**Total (N=169)**	
		n	%
Extraneous Identification Materials	Clothes	158	93.49%
	Religious Symbols/ Locket/ Kara	4	2.37%
	Bangles / Watch	5	2.96%
	Red Color Kalawa(Religious Thread)	11	6.51%
	Wrapped in Plastic Sheet	8	4.73%
	Wrapped in Cloths Sheet	12	7.10%
	No Clothes on Dead Body	2	1.18%
Locality	Urban	141	83.43%
	Rural	28	16.57%

Continue.....

Seasonal trends	Spring	28	16.57%
	Summer	40	23.67%
	Monsoon	26	15.38%
	Autumn	49	28.99%
	Winter	26	15.38%
Place	Near Religious places	64	37.87%
	Hospitals	22	13.02%
	Roadside	8	4.73%
	Railway and bus Stations	21	12.42%
	Bus Stand	9	5.33%
	Water Bodies/ Drowning	28	16.57%
	Other Area	26	15.38%
Manner of death	Natural	114	67.46%
	Accidental	33	19.53%
	Suicidal	16	9.47%
	Homicidal	6	3.55%
Duration since death	1-3 Days	63	37.28%
	4-6 Days	73	43.20%
	7-9 Days	23	13.61%
	> 9 Days	10	5.92%
Cause of death	Generalized diseased condition of multiple organs	55	32.54%
	Alcohol overdose	6	3.55%
	Burn Injury	2	1.18%
	Others	1	0.59%
	Infanticide	6	3.55%
	Sudden and Natural Death	26	15.38%
	Poison Ingestion	2	1.18%
	Drowning	13	7.69%
	Due to Injuries	5	2.96%
	Heart Attack	3	1.78%
	Railway Injury	1	0.59%
	RSA	22	13.02%
	Starvation	27	15.98%

Discussion

This study focuses on the critical role of forensic medicine specialists in identifying unidentified bodies and to ascertain there cause of death. The present study was in accordance with various studies conducted in India and around the globe in whom reported the predominant age group to be 21-50 and showed male predominance.[6-15] Only one study conducted in new Delhi reported female predominance.[16] The male predominance could be attributed to the patriarchal society of our country, where a female's main domain is her home; be it parental or in-laws, and her absence is usually enquired in to; while a male is free to go about where ever he wants.

It was found that more number of unidentified deaths were from metropolitan cities and as there the residing population is more and there is more

migratory population. The different regions have different number of unidentified bodies which might be due to different cultural aspects of the region and due to demographic variation.

In the present study, the majority of the cases were identified on the basis of the clothes belonging to the cases, n= 158 (93.49 %). The visible marks of identification are most common for identification. In the present study, it was found that 16.57 % of the unidentified bodies were brought from the rural areas while 83.43 % were brought from the urban areas. These findings are consistent with a similar study conducted in Mumbai.[17] Their research yielded comparable results, further emphasizing the apparent urban-rural disparity and the socio-economic imbalance persisting within urban zones. This consistency between studies strengthens the validity of our observations and signals a need for addressing these socio-economic imbalances in both settings.

In the present study, it was found that majority of the unidentified bodies were found in the autumn season (28.99 %) followed by the summer season (23.67 %). That is because of extreme heat experienced in the summer season and that may cause death due to dehydration or due to sun stroke mostly in the beggars. In the present study, most of the unidentified dead bodies were discovered near religious places (n= 64, 37.87 %) like temple or gurudwara the reason for this is that there are many migrated persons and beggars living around religious place in search of some donations or food, followed by 28 cases recovered from the water bodies/drowning (n= 28, 16.57 %), 26 cases from the other areas like open fields (n= 26, 15.38 %) and 22 cases from the hospitals (n= 22, 13.02 %). These findings were compared with the study done at France where cadavers were mainly discovered in public places (65.7%). [18]

The cause of the death was registered as natural and unnatural. In the present study, most deaths were natural, n=114 (67.46%), followed by accidental, n= 33 (19.53 %), suicidal; n=16 (9.47 %) and homicidal, n=6 (3.55 %).These results were more or less similar to the study done by Chattopadhyay[19] and Kumar[20] where majority of the cases were due to some diseases, pathological conditions or old age.

In the present study, in the majority of the cases the time period between the body brought to the mortuary and the when the autopsy was performed was 4 - 6 days (n= 73, 43.20 %). This was in accordance with the study done by Gitanjali et al where in majority post mortem was performed between 3 - 7 days (29.26 %).[12] The police take and preserve fingerprints, publish photos in newspapers and post pamphlets outside mortuaries, hospitals, police stations, and train stations to find unidentified bodies. This activity identifies more bodies, but it takes time, and the police normally request a postmortem after completing the foregoing requirements.

In the present study, regarding the cause of the death multi organ failure was the most common of the death on post mortem (n= 67, 39.64 %) followed by injury (n= 29, 17.16 %). The study from Italy found car accidents to be 21.6%, railway injuries (8%), assault (17.6%), poisoning (17.9%).[21] Head injuries was the principal cause of death in 75.86 % cases who died due to injuries. This result was similar to the study done in United States.[22]

Table 3: Comparison of the various study parameters in reference to unknown dead bodies.

Region	Year	No. Of cases	M:F	Age group (years)	Cause of death	Area of recovery	Manner of death
Punjab, India[8]	2008-10	156	6.8	21-40	Starvation 25 %	Near Holy places 28.8 %	Natural 46.1 %
Milan, Italy[21]	1995-2008	454	4.29	21-40	Car accidents 21.6 %	–	Accident 33.9 %

Continue.....

Garches, France[22]	2003-09	134	2.28	47.4 (avg)	Drowning 27.2 %	Public places 65.7 %	Suicidal 40.3 %
Denmark[23]	1992-96	89	3.68	19-39	Drowning 71 %	–	Suicidal 50%
USA[24]	1979-2004	413	4.15	18-37	Assault 31.8 %	–	Accident 41.8 %
Mumbai, India[25]	2013-15	109	11.1	41-50	TB 43.11 %	Footpath 72.27 %	–
Present study	2020-22	169	11.07	41-50	Multi organ failure 39.64 %	Near Religious places 37.87 %	Natural 67.46%

Conclusion

As regards the efforts for identification much more is needed to be done by the police personnel. Bodies that are unknown/unclaimed should be presented for autopsy forthwith without any delay so that decomposition and other artifacts do not set in and obscure the findings of the postmortem examination. The rule for preservation of an unknown body for 72 hours applies for its disposal and should not for its postmortem examination. Thus valuable data regarding the cause of death can be established. Active investigation and modern investigative and identification techniques should be used, workload of the police officers needs to be redistributed, and accountability of the police has to be fixed to get the body identified. More use of social medial and artificial intelligence should be promoted.

What is known about this topic

The unidentified dead bodies is big problem. Most of unidentified dead bodies remain unidentified even after efforts of police department which are old ways.

What this study adds

The cause of death among unidentified dead bodies, usual place of recovery of unidentified dead bodies, seasonal variation of unidentified dead bodies and new methods of identifications.

Funding Sources: no

Ethical Clearance/Statement of Ethics: Taken vide letter number BFUHS/2K21p/TH/14739 Dated 15.12.2021. from Baba Farid University of health sciences

Competing interests: The authors declare no competing interests.

References

1. Kaur S, Kujur M, Rawat B, Upadhyaya M, Varshney KC. Journey of unidentified bodies towards DNA identification: A social, medico-legal and forensic perspective from New Delhi in India. Forensic Sci Int. 2022 Dec;341:111470.
2. Biswas G. Recent Advances in Forensic Medicine and Toxicology - 2: Good Practice Guidelines and Current Medicolegal Issues. JP Medical Ltd; 2018. 692 p.
3. Uerlings S, Welter V, Madea B, Grabmüller M. Comparative analysis of DNA extraction processes for DNA-based identification from putrefied bodies in forensic routine work. Forensic Sci Int. 2021 Mar; 320:110707.
4. Vij. Textbook Of Forensic Medicine And Toxicology: Principles And Practice. Elsevier India; 2008. 776 p.
5. Waghmare PB. Establishing Identity and Cause of Death in Mutilated and Un Identifiable Corpses: A Challenging Task for Medico Legal Expert. J Forensic Biomech. 2015 ;06(01).
6. Anderson BE. Identifying the dead: methods utilized by the Pima County (Arizona) office of the medical examiner for undocumented border crossers: 2001-2006. J Forensic Sci. 2008 Jan;53(1):8–15.
7. Ambade VN, Keoliya AN, Deokar RB, Dixit PG. Decomposed bodies-- still an unrewarding autopsy? J Forensic LegMed. 2011 Apr;18(3):101– 6.
8. Singh P, Aggarwal A, Aggarwal KK, Oberoi SS, Bhullar DS, Walia D. Unidentified human cadavers: An unaddressed issue. J Forensic Med Toxicol. 2012 Jan 1;29:107–10.

9. Raghavendra Babu YP, Joseph N, Kadur K. Mortality among homeless and unclaimed bodies in Mangalore city - An insight. J Forensic Leg Med. 2012 Aug;19(6):321–3.
10. Chaudhary BL, Band RM, Yadav P, Kumar M, Rani Y. Death Due to Tuberculosis in Homeless Unclaimed Population in Central Delhi-a Retrospective Study. Indian J Public Health Res Dev. 2013 Jan 10;4(1):28–32.
11. Kumar S, Verma AK, Ali W, Singh US. Homeless and unclaimed persons' deaths in north India (Jan 2008-Nov 2012): a retrospective study. Med Sci Law. 2015 Jan;55(1):11–5.
12. Gitanjali D. Retrospective Analysis of the Profile of Unknown Dead Bodies A Four Year Study in a Tertiary Care Hospital in North Tamilnadu,India. J Dent Med Sci. 2018 Apr;17(4):15–22.
13. Rastogi A, Singh BK, Dadu S, Pendro T. Unknown dead bodies profile and pattern of cause of death in central India-One year retrospective autopsy based study in Indore, Madhya Pradesh. J Forensic Med Toxicol. 2018 Jul 1;35:15.
14. Reid KM, Martin LJ, Heathfield LJ. Bodies without names: A retrospective review of unidentified decedents at Salt River Mortuary, Cape Town, South Africa, 2010 - 2017. South Afr Med J Suid-Afr Tydskr Vir Geneeskd. 2020 Feb 26;110(3):223–8.
15. Rao D. An analytical study of decomposed bodies during forensic autopsies. IP Int J Forensic Med Toxicol Sci. 2022 Jan 15;6(4):141–6.
16. Garg A, Behera C, Chopra S, Bhardwaj DN. Mortality among homeless women who remain unclaimed after death: An insight. Natl Med J India. 2016;29(4):207–8.
17. Chikhalkar BG, Chavan GS, Nadkarni N, Nanandkar SD. Pattern of Death in Unknown/Unclaimed Bodies Brought at a Tertiary Healthcare Centre in Mumbai. Int J Health Res Medico Leg Pract. 2018;4(1):33–6.
18. Cavard S, Alvarez JC, De Mazancourt P, Tilotta F, Brousseau P, De La Grandmaison GL, et al. Forensic and police identification of "X" bodies. A 6-years French experience. Forensic Sci Int. 2011;204(1–3):139–43.
19. Chattopadhyay S, Shee B, Sukul B. Unidentified bodies in autopsy – A disaster in disguise. Egypt J Forensic Sci. 2013 Dec;3(4):112–5.
20. Kumar A, Harish D, Chavali K, Singh A. Patterns of Cause of Death in Unknown Dead Bodies A Three Year Study in a Tertiary Care Hospital. J Indian Acad Forensic Med Toxicol. 2012 Dec 1;34:304–8.
21. Cattaneo C, Porta D, De Angelis D, Gibelli D, Poppa P, Grandi M. Unidentified bodies and human remains: an Italian glimpse through a European problem. Forensic Sci Int. 2010 Feb 25;195(1–3):167.e1-6.
22. Paulozzi LJ, Cox CS, Williams DD, Nolte KB. John and Jane Doe: the epidemiology of unidentified decedents. J Forensic Sci. 2008 Jul;53(4):922–7.
23. Kringsholm B, Jakobsen J, Sejrsen B, Gregersen M. Unidentified bodies/skulls found in Danish waters in the period 1992-1996. Forensic Sci Int. 2001 Dec 1;123(2–3):150–8.
24. Happe L, Cathala P, Cattaneo C, Baccino E. Identification of a cadaver by mammary prosthetic implants: A case report. Rev Médecine Légale. 2011 May;2(2):80–2.
25. Chikhalkar BG, Chavan GS, Nadkarni N, Nanandkar SD. Pattern of Death in Unknown/Unclaimed Bodies Brought at a Tertiary Healthcare Centre in Mumbai. Int J Health Res Medico Leg Pract. 2018;4(1):33–6.