

Demographic Profile and Patterns of Cause of Death in Unknown Dead Bodies - A Three-Year Study in a Tertiary Care Hospital

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ABSTRACT

Introduction: Unknown dead bodies are those dead bodies in which identity not determined till the examination and reporting. It is a great challenge for both police and autopsy surgeons in establishing the identity of these bodies.

Aims: To describe the demographic and medico-legal profile of unknown dead bodies examined in a Tertiary Care Hospital over a three-year period and to identify the patterns and cause of death in these cases.

Methods: Unknown dead bodies brought for autopsies in the year 2022, 2023 and 2024 comprised the materials and the data were collected from the postmortem records

Results: Out of total 5726 dead bodies brought for medico legal autopsy in three years (2022, 2023, 2024), we conducted 455(7.94%) unknown dead bodies examination in which 388 cases (85.30%) were male, female cases numbered 67 (14.70%). Maximum number of 125(27.47%) cases seen in age group 51-60 years, out of which 106(23.30%) were male and 19(4.17%) cases were female. Followed by age group 41-50 years in which 95(20.88%) cases seen out of which 79(17.36%) were male and 16 (3.52%) were female. Seasonal variation seen in our study, maximum cases in winter 199 (43.74%) followed by summer 145(31.86%) and least in monsoon season 111(24.40%) death due to natural cause outnumbered a maximum of 270 (59.34%) of which death by myocardial infarction was higher with 189 (41.54%) cases followed by cerebrovascular accident 45 cases (9.89%).

Conclusion: In spite of digitalization of the world with advanced technologies, fixing of identity is still a challenge because of lack of documenting data related to identification during life.

Keywords: Unknown, Mortuary, Autopsy, Seasonal variation, Injuries, Asphyxia, Pathology, Poisoning.

INTRODUCTION

Medico-legal investigation is carried out when an individual dies of unnatural causes or suddenly ⁽¹⁾. The purposes of medico-legal investigations are i) to determine the cause of

death ii) to aid in the criminal investigation of death iii) to identify the deceased ⁽¹⁾. Identification is the determination of the individuality of a person by certain specific characteristics ⁽²⁾. Identification of the

deceased is not only for criminal justice but also for social justice (3,4). Identification represents one of the most basic of all human rights (5). “Unclaimed body” refers to a person who dies in a hospital, prison or public place, which has not been claimed by any near relatives or personal friends within such time period as may be prescribed (6). Every year, millions of dead people across the globe remain unidentified and are never returned to their families or communities (7,8). For administration purpose, a dead person needs to be identified for the completion of a death certificate. Identification of a dead body becomes cumbersome due to non-availability of the facilities and ante-mortem reference data (9-11). As multiple morbidity is common among the homeless individuals, for effective health interventions, primary health care that is accessible and available is a pre-requisite (6). As per the Police Manual, a dead body is declared unclaimed only after 3 days after which the police are legally authorized to dispose of the body as per the local customs. When proper identification and complainant are absent, the police are not investigating these deaths, even in cases of homicide. In spite of advancements in technology, identification still remains a challenge both for police and autopsy surgeon. Unidentified dead bodies are global health crisis requiring urgent attention (12). Missing persons and unidentified remains are the Nation’s silent mass disaster (13).

AIMS AND OBJECTIVES

1. To describe the demographic, medico-legal and pathological profile of unknown dead bodies autopsied at tertiary care centre over a period of three years
2. To identify the patterns and causes of death in these cases

Primary Objective:

To determine the distribution of causes of death in unidentified dead bodies

Secondary Objective:

To examine, record and summarise both external and internal injuries and findings

MATERIALS & METHODS

The study was conducted at the Department of Forensic Medicine of a Tertiary Care Hospital of Chengalpattu District. This Hospital serves population from the nearby districts of Kancheepuram, Thiruvallur, Thiruvannamalai, South and South West regions of Chennai. This was retrospective study for a period of three years from January 2022 to December 2024. All the medico-legal cases of dead bodies labelled as Unknown/Unidentified during the above-mentioned period were included in this study. Data were collected and recorded from the autopsy reports. The data were analyzed further for cause of death, manner of death.

Inclusion criteria’s: All cases registered as unknown dead body by the police.

Exclusion Criteria’s: Fully skeletonized bones.

RESULT

Total post mortems conducted in the year 2022, 2023 and 2024 were 5726 and out of which 455 (7.94%) unknown dead bodies came for the post-mortem examination. In 455 unknown dead bodies, 388 (85.27%) were male, female numbered 67(14.73%). An Age wise distribution below 1 year contributed 4(0.88%) cases, out of which 1 (0.22 %) was male, 3(0.66 %) were female. Age range between 1-10 years contributed 3 (0.66 %) cases and in this age group all were male. In age group 11-20, all 6 (1.32%) cases were male. In age group, 21-30 years, number of cases were 11(2.42%) of which all were male. In age group 31-40 years 70(15.38%) cases seen, out of which 62 (13.63%) were male and 8 (1.75%) were female. In age group 41-50 years, 95 (20.88%) cases seen, out of which 79 (17.36%) were male and 16 (3.52%) cases were female. Maximum number of cases were in the age group of 51-60 years, 125(27.47%) cases out of which 106 (23.30%)

were male and 19 (4.17%) were female. In age group 61-70 years, 74 (16.26%) cases seen out of which 64 (14.07%) were male and 10 (2.19%) cases were female. In age group 71-80 years 42 (9.23%) cases seen out of which 35 (7.69%) were male and 7 (1.54%) cases were female. In age group of more than 80 years 25 (5.49%) cases of which 21(4.62%) were male and 4 (0.87%) were female.

Our study revealed distribution of cases with seasonal variation. In summer, 145(31.86%) cases found with monthly distribution as in March 44 (9.67%) cases, in April 21 (4.61%) cases, in May 56(12.30%) cases and in June 24 (5.28%) cases. In monsoon season, 111 (24.40%) cases were found with monthly distribution as in July 28 (6.15%)cases, in August 21 (4.62%) cases, in

September 22 (4.84%) cases and in October 40 (8.79%) cases) Maximum number of cases were found in winter season 199 (43.74%) cases found with monthly distributions as in November 65 (14.29%) cases, in December 51 (11.21%) cases, in January 38(8.35%) cases and in February 45(9.89%) cases.

Distribution of cases according to cause of death by RTA is 98 (21.54%) cases, drowning is 16 (3.51%) cases, cirrhosis is 4 (0.88%) cases, myocardial infarction is 189 (41.54%) cases, TB is 32 (07.03%) cases, burns is 10 (2.20%) cases and TTA contributed 15 (3.30%) cases. Hanging contributed 18 (3.96%) cases, cerebrovascular accident is 45 (9.89%) cases seen and poisoning in 28 (6.15%) cases.

TABLE 1: DISTRIBUTION ACCORDING TO SEX

S.NO	GENDER	NUMBER	PERCENTAGE
1.	MALE	388	85.27 %
2.	FEMALE	67	14.73 %
TOTAL		455	100 %

TABLE 2: AGE AND SEX WISE VARIATIONS

S.NO	AGE GROUP	NO. OF CASES	%	MALE	%	FEMALE	%
	0-1	4	0.88	1	0.22	3	0.66
	1-10	3	0.66	3	0.66	0	0
	11-20	6	1.32	6	1.32	0	0
	21-30	11	2.42	11	2.42	0	0
	31-40	70	15.38	62	13.63	8	1.75
	41-50	95	20.88	79	17.36	16	3.52
	51-60	125	27.47	106	23.30	19	4.17
	61-70	74	16.26	64	14.07	10	2.19
	71-80	42	9.23	35	7.69	7	1.54
	>80	25	5.50	21	4.62	4	0.88
TOTAL		455	100	388	85.29	67	14.71

TABLE 3 SEASONAL VARIATIONS

S.NO	MONTH	TOTAL NO OF CASES	PERCENTAGE
1.	JANUARY	38	8.35%
2.	FEBRUARY	45	9.89%
3.	MARCH	44	9.67%
4.	APRIL	21	4.61%
5.	MAY	56	12.30%
6.	JUNE	24	5.28%
7.	JULY	28	6.15%
8.	AUGUST	21	4.62%
9.	SEPTEMBER	22	4.84%
10.	OCTOBER	40	8.79%
11.	NOVERMBER	65	14.29%
12.	DECEMBER	51	11.21%
TOTAL		455	100%

TABLE 4: DISTRIBUTION ACCORDING TO CAUSE OF DEATH

S.N.	Cause of death	No. of cases	%
1.	RTA	98	21.54
2.	DROWNING	16	3.51
3.	CIRRHOISIS	4	0.88
4.	MYOCARDIAL INFARCTION	189	41.54
5.	TB	32	7.03
6.	BURNS	10	2.20
7.	TTA	15	3.30
8.	HANGING	18	3.96
9.	CEREBRO VASCULAR ACCIDENT	45	9.89
10.	POISONING	28	6.15
	Total	455	100

DISCUSSION

Unknown bodies brought in mortuary for post-mortem examination accounted 7.95% of total autopsies conducted in the department during the study period. This unknown bodies' number pattern is almost similar to about 10% of total autopsy load in studies conducted by Gitanjali (14), Ashok K Rastogi et al (15), Jaspinder Pratap Singh (16). In a study conducted in Chandigarh, autopsies on unknown bodies comprised only 4% of total autopsy conducted in a study by Kumar Ajay et al (17) and 55 out of 721 cases of total autopsy about 7.63% cases were unidentified in Mumbai Chikhalkar B et al (18).

In our study 388 (85.27%) were male and female numbered 67(14.73%). Similar findings of male outnumbering females were observed in the studies conducted by Athi Baliso et al(9) Gitanjali (14), Ashok K Rastogi et al(15), Kumar Ajay et al(17), Nwafor CC(19), Rajeshwar S Pate et al(20), Mukesh Prasad et al(21), Yadav A et al(22), Reid, K.M(23), Işcan MY et al(24), Dr Mahendra Namdeo Wankhede et al(25), Dr. Sachin Kumar Meena et al(26) and Dode, P(29)

Our study revealed maximum number of 125 cases in age group 51-60 years which comprised 27.47 % followed by 95 cases in 41-50 years age group (20.88%) and 74 cases in 61-70 years age group (16.26%). When we consider the middle age 41 -60 years, the cases were 220, which comprises a maximum load which may be due to migration of the population of this age group for job and livelihood. Least number of cases were seen in age group 1-10 years, 3

cases (0.66%). Similar configuration was seen in studies by Ashok K Rastogi et al (15), Namdeo Wankhede et al (25) and Sakthimani, M et al (28) with maximum number of cases in the age group 41-50 years 34.86% cases, followed by the age groups 51-60 years (25.68%). Slightly different finding was observed in age group 31-40 years followed by 41-50 years and the very young age group of 1-10 years was least commonly involved in a study by Yadav A et al (22). A peculiar distribution of cases was observed in these studies by Dr. Sachin Kumar Meena et al (26) and Sarah Al Hinnawi (27) where maximum cases were found in age group 31-40 years. Our study differed from a study Gitanjali (14) where maximum number of cases were of 61-70 years (23.47%)

Seasonal variations were observed in our study. In winter season 199 (43.74%), in summer 145(31.86%) cases and in monsoon season 111(24.40%) which is similar to a study conducted by Kumar A et al(30) where the highest number of 284 (38.64%) cases occurred in winter followed by monsoon and summer, 56 cases in winter followed by 43 cases in summer, and in study(28), 35 cases occurred in monsoon and 18 cases in autumn whereas in a study conducted by Ashok K Rastogi et al(15) maximum cases were in monsoon 91 (40.27%) summer 81 (35.85%) and least in winter season 56 (24.78%). In a study by Dode P et al (29), most of the cases occurred between January to March.

In our study, maximum number of cases died due to natural cause due to pathology, the bulk of the pathological death with multiple organ involvement were about 189

(41.53%) cases. 21.53 % cases died due to injuries which were produced by RTA. These results were almost similar to the other studies conducted in Delhi Kumar A et al (30), Istanbul Altun G (31) and Tokyo Suzuki H et al (32) all being metropolitan cities with similar problems but majority of cases 87 (55%) were accidental in the study by Sakthimani, M et al (28).

CONCLUSION

Globally the magnitude of unidentified dead bodies is a public health crisis and it carries unfavorable implications in dispensing the justice. The burden of unidentified dead bodies is greater in our India documenting some higher rates. Absence of vital records of identity, improper identification methods and guidelines, inadequate manpower, burying unidentified remains without attempting to collect DNA samples hinder the efforts to solve missing persons' cases. As the identification efforts are much more to be done by the police personnel, active investigation and newer technologies should be followed by the police to fix the identity of a missing person. DNA analysis and fingerprinting should be done in all cases to establish the identity which may be of use even in future. The present rule for preservation of an unknown body for 72 hours applies for its disposal but not for postmortem examination. But lack of interest in unknown bodies by police delays postmortem examination and hence piling up of decomposed cases happens which hampers and obscures important postmortem findings. Legal guidelines should be framed along with humane and scientific approach to establish the identity of the dead

Declaration by Authors

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REFERENCES

1. Saukko P, Knight B (2005) Chapter 3: The establishment of identity of human remains. In: Saukko P (ed) Knight's Forensic Pathology, 3rd ed. Arnold: A member of the Hodder Headline Group, London, UK, pp 98-135
2. Dixit PC. Text book of forensic medicine and toxicology, 2nd edition, New Delhi: PEEPEE; 2014. Page no.55
3. Semma Tamayo A. Missing Persons and Unidentified Human Remains: The Perspective from Armed Conflict Victims Exhumed in Granada, Colombia. Forensic Sci Int. 2020 Dec; 317:110529. doi: 10.1016/j.forsciint.2020.110529. Epub 2020 Oct 24. PMID: 33147548.
4. 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. S Afr Med J. 2020 Feb 26;110(3):223-228. doi: 10.7196/SAMJ.2020.v110i3.14192. PMID: 32657700.
5. Moon C. Human rights, human remains: forensic humanitarianism and the human rights of the dead, International Social Science Journal, Volume 65, Issue 215-216 pp. 49-63, <https://doi.org/10.1111/issj.12071>
6. Wright NM, Tompkins CN. How can health services effectively meet the health needs of homeless people? Br J Gen Pract. 2006 Apr;56(525):286-93. PMID: 16611519; PMCID: PMC1832238.
7. Mazzairelli D, Milotta L, Franceschetti L, Maggioni L, Merelli VG, Poppa P, Porta D, De Angelis D, Cattaneo C. Twenty-five years of unidentified bodies: an account from Milano, Italy. Int J Legal Med. 2021 Sep;135(5):1983-1991. doi: 10.1007/s00414-021-02560-9. Epub 2021 Mar 22. PMID: 33748873.
8. Reid KM, Martin LJ, Heathfield LJ. Understanding the burden of unidentified bodies: a systematic review. Int J Legal Med. 2023 Jul;137(4):1193-1202. doi: 10.1007/s00414-023-02968-5. Epub 2023 Mar 2. PMID: 36862160; PMCID: PMC10247560.
9. Athi Baliso, Chandra Finaughty, Victoria E. Gibbon, Identification of the deceased: Use of forensic anthropology at Cape Town's busiest medico-legal laboratory, Forensic Science International: Reports, Volume 1, 2019, 100042, ISSN 2665-9107,

- <https://doi.org/10.1016/j.fsir.2019.100042>. (<https://www.sciencedirect.com/science/article/pii/S2665910719300428>)
10. Evert, L 2011, Unidentified bodies in forensic pathology practice in South Africa: demographic and medico-legal perspectives, MSc dissertation, University of Pretoria, Pretoria, viewed yymmdd < <http://hdl.handle.net/2263/24911> > E12/4/227/gm
 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. doi: 10.1177/0025802414523585. Epub 2014 Feb 17. PMID: 24534147.
 12. Suwalowska H, Ali J, Rangel de Almeida J, Fonseca SA, Heathfield LJ, Keyes CA, Lukande R, Martin LJ, Reid KM, Vaswani V, Wasti H, Wilson RO, Parker M, Kingori P. "The Nobodies": unidentified dead bodies-a global health crisis requiring urgent attention. *Lancet Glob Health*. 2023 Nov;11(11): e1691-e1693. doi: 10.1016/S2214-109X (23)00420-5. Epub 2023 Sep 26. PMID: 37774720.
 13. Ritter N. Missing persons and unidentified remains: the nation's silent mass disaster. *Natl Inst Justice J* 2007; 256: 2-7
 14. Gitanjali.D "Retrospective Analysis of the Profile of Unknown Dead Bodies – A Four-Year Study in a Tertiary Care Hospital in North Tamilnadu - India." *IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)*, vol. 17, no. 4, 2018, pp 15-22.
 15. Ashok K Rastogi et al. Unknown dead bodies profile and pattern of cause of death in central India-one-year retrospective autopsy-based study in Indore, Madhya Pradesh, *Journal of Forensic Medicine and Toxicology (July-Dec)* Vol. 35 No. 2 (2018)
 16. Jaspinder Pratap Singh, Sunny Basra - Four-year retrospective profiling of the unknown/unclaimed autopsy cases, *Asian Journal of Pharmaceutical and Clinical Research*, Vol 17, Issue 8, 2024 Online - 2455-3891 Print - 0974-2441
 17. Kumar Ajay, Dasari Harish, Chavali K.H, Singh Amandeep - Patterns of Cause of Death in Unknown Dead Bodies A Three Year Study in a Tertiary Care Hospital, December 2012, *Journal of Indian Academy of Forensic Medicine* 34(4):304-308, DOI:10.1177/0971097320120408
 18. Chikhalkar Bhalchandra G, Nadkarni Nitish A, Chavan Gajanan S, Nanandkar Sudhir D. Pattern of Death in Unknown Bodies at A Tertiary Healthcare Centre. *Int J Health Res Medico Leg Prae* 2018 July;4(2):66-70.
 19. Nwafor CC, Kudamnya IJ. Retrospective Study of Abandoned Dead Bodies in the Morgue of a Tertiary Health Institution: The Identified, Unidentified and Unclaimed. *Niger Med J*. 2022 May 13;62(5):226-231. doi: 10.60787/NMJ-62-5-45. PMID: 38716432; PMCID: PMC11073839.
 20. Rajeshwar S Pate, Mangesh R Ghadge, Dinesh Samel, Retrospective analysis of unclaimed/unknown dead bodies. *Indian Journal of Forensic Medicine & Toxicology*, Volume 12, Issue 3, 2018, Page.No.48-53
 21. Mukesh Prasad et al. Study of Medicolegal Aspects of Unknown Cases in P.M.C.H., Patna, *Int J Med Res Prof*.2019 Jan; 5(1); 39-42.
 22. Yadav A, Kumar A, Swain R, Gupta SK. Five-year study of unidentified/unclaimed and unknown deaths brought for medicolegal autopsy at Premier Hospital in New Delhi, India. *Med Sci Law*. 2017 Jan;57(1):33-38. doi: 10.1177/0025802416680523. Epub 2016 Nov 23. PMID: 27872398.
 23. Reid, K.M. 2018. Forensic human identification: Generating Y-STR data for the South African population. ,Faculty of Health Sciences, Department of Pathology. <http://hdl.handle.net/11427/30060>
 24. Işcan MY, Olivera HE. Forensic anthropology in Latin America. *Forensic Sci Int*. 2000 Mar 13;109(1):15-30. doi: 10.1016/s0379-0738(99)00213-3. PMID: 10759068.
 25. Dr Mahendra Namdeo Wankhede, Dr Manoj Bhausheb Parchake, Dr Harish Pathak, Dr Abhijit Hosmani - Study of demographic profile of unidentified dead bodies in central Mumbai region, *Scholars Journal of Applied Medical Sciences (SJAMS) Sch. J. App. Med. Sci.*, 2017; 5(1A):57-61, DOI: 10.36347/sjams.2017.v05i01.011
 26. Dr. Sachin Kumar Meena et al - Pattern Of Death In Unknown Bodies Brought At Mortuary Of Tertiary Hospital - - *International Journal of Medical Science and Current Research (IJMSCR)*, Volume 6, Issue 4, Page No: 89-97 July-August 2023

27. Sarah Al Hinnawi, Shivkumar R. Kolle, Rajesh B. Sukhadeve, Sachin S. Sonawane, Mahendra N. Wankhede, Tejas Shelar - Three-year profile of unknown bodies brought to a tertiary care hospital in Western Mumbai: a retrospective study, *Int J Acad Med Pharm* 2025; 7 (4); 1116-1120
 28. Sakthimani, M., & Peranatham, S. (2019). Autopsy based analysis of unidentified dead bodies in a tertiary care hospital of South India. *Journal of Indian Academy of Forensic Medicine*, 41(1), 30-33. <https://jiafm.in/index.php/jiafm/article/view/326>
 29. Dode, P., Bhattacharyya, P., Khurana, S., & Chand, S. (2024). Retrospective Study of Unidentified or Unclaimed bodies Brought for Autopsies at a Tertiary Care Hospital in Uttar Pradesh. *Journal of Indian Academy of Forensic Medicine*, 46((1-Suppl), 128-131. [https://doi.org/10.48165/jiafm.2024.46.1\(Suppl\).6](https://doi.org/10.48165/jiafm.2024.46.1(Suppl).6)
 30. Kumar A, Lalwani S, Behera C, Rautji R, Dogra TD. Deaths of homeless unclaimed persons in South Delhi (2001-2005): a retrospective review. *Med Sci Law*. 2009 Jan;49(1):46-50. doi: 10.1258/rsmsl.49.1.46. PMID: 19306620.
 31. Altun G, Yilmaz A, Azmak D. Deaths among homeless people in Istanbul. *Forensic Sci Int*. 1999 Jan 11;99(2):143-7. doi: 10.1016/s0379-0738(98)00178-9. PMID: 10077858.
 32. Suzuki H, Hikiji W, Tanifuji T, Abe N, Fukunaga T. Medicolegal death of homeless persons in Tokyo Metropolis over 12 years (1999-2010). *Leg Med (Tokyo)*. 2013 May;15(3):126-33. doi: 10.1016/j.legalmed.2012.10.004. Epub 2012 Dec 1. PMID: 23206985.
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