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A NINE -YEAR RETROSPECTIVE STUDY OF EPIDEMIOLOGY OF CAUSE OF DEATH IN JOHN AND JANE DOE, BROUGHT FOR AUTOPSY AT A TERTIARY MEDICO LEGAL CENTRE IN SOUTH-WESTERN INDIA: A MEDICO LEGAL PERSPECTIVE

Forensic Medicine

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ABSTRACT

The challenges of unidentified dead bodies in forensic field are well recognised. It has many medical and legal implications. If Identity remains unknown it deprives the family members not only an opportunity to do their last rites and to mourn them. That is why determining its true magnitude is very important. The present 9 year retrospective study was undertaken to study the profile of these unknown dead bodies. During the nine-year study period from the year 2009 to 2017, a total of 2333 cases were brought for medico legal autopsy to mortuary of which unknown bodies accounted for 7.67 % (n = 179). Predominant gender was male 155 cases (86.59 %) with male: female ratio of 6:1. In the age group 31-40 years (n = 55, 30.73%) maximum number of cases were found, second peak was found between 41-50 years (n = 48 cases, 26.82 %). In the month of April (n = 27 cases, 15.1 %) the maximum numbers of cases were encountered. Next surge was in the following month of May (n = 19 cases, 10.6 %). The manner of death was predominantly natural death (n = 106 cases, 59.22 %) and the top most cause being the pathology of respiratory system (n = 76 cases, 42.45%) followed by cardio vascular system (n = 21 cases, 11.73 %). Of the unnatural causes (n = 71 cases, 39.67%) drowning was responsible for the most common mode (n = 30 cases, 16.75 %) followed by head injury (n = 20 cases, 11.17 %). A need for more similar studies and establishing a central database of all states and union territories related to unidentified dead bodies was recognised.

KEYWORDS

Unidentified body, Autopsy, DNA Profiling, Decomposition, Cause of death

INTRODUCTION

John Doe (for males) and Jane Doe (for females) are names that are well known in western world particularly United States, Canada and Ireland.[1,2] They may refer to an unidentified person or to a corpse whose personal identity is unknown or unconfirmed or to somebody whose true identity must be kept confidential in a criminal or civil case.[3,4] The problem of Identification commonly arises and help of forensic expert is required in an event of fire, explosion, disaster, unknown dead body or decomposed/mutilated body or skeletal remains found on/along the road or field, or in a railway compartment or in water.[5] In cases of homicide where Identification is essential for establishment of Corpus delicti, as its mandatory as per law to determine identity.[6,7] Identification is a process of determining individuality of an individual based on various characteristics.[8] Identification is done in living person or dead by recognizing certain features or characteristics that are unique to that person.[9] Identification is of two types - complete also known as absolute and incomplete or partial.[10] The absolute fixation of individuality of a person is known as Complete identification. Ascertainment of only some facts about the identity while others remain unknown is known as Partial identification.[11]For establishing identity numerous scientific and conventional parameters are used.[12-16] As per the Global statistics, around 10% of the total dead bodies which report for medico legal autopsies are unidentified and this ascends to 15-25% in developing nation like India.[17,18,19] That is why it has been rightly termed as a "Silent Epidemic" by Ritter.[20]

As per National Crime Records Bureau (NCRB) data total 34,592 unidentified dead bodies were recorded in the year 2015. Among the various states, with 6,185 unidentified dead bodies the state of Maharashtra was at the top.[21]

Problem related to identification gets further aggravated due to absence of any central database or registry for unidentified decedents unlike the United states where they have system like "NamUs" (National Missing and Unidentified Persons System).[22] Also for the disposal of unidentified dead bodies the guidelines are different in different states across the country. As per the guidelines of Punjab police that the police are legally authorized to dispose off the body if a body remains unidentified after making all efforts to establish its identity and no one comes forward to claim the body after 72 hours.[23]

Objective of the current study is to determine the profile of the unidentified dead bodies in terms of sex, age, cause of death, place from where the bodies have been retrieved, and identification of demographic characteristics and to analyse the various steps taken to establish identity by the investigating officer and the autopsy surgeon. This study also aims to bring out the seriousness of problem and suggest measures which can help in establishing identity of unidentified decedents. It also aims to identify population at risk (eg. Beggars) and emphasize the need for developing a National/State level Unidentified Decedent Registry/Database and a state of art DNA repository for identifying them at a later stage.[24,25,26]

MATERIAL AND METHODS

The present study is a cross-sectional retrospective study of medico legal autopsies of all unidentified bodies brought to the Medico legal Centre of a tertiary healthcare centre of a metropolitan city in South-Western India from January 2009 to December 2017. Necessary permission was taken from the Institutional ethical committee. Data was collected using a pre-designed format from Post mortem registers/records, Inquest papers and Post mortem reports. The results were studied using appropriate statistical methods. Microsoft word and excel were used for generating charts and graphs.

Observation and Results

From 01 January 2009 to 31 December 2017, a total of 2333 bodies which were brought for medico legal autopsy, 179 remained unidentified at the time of post-mortem examination at a Medico-Legal centre of a tertiary care centre. The trend pertaining to unidentified dead bodies observed between the above periods can be seen in fig 1.

Of the 179 cases, male (86.59%) constituted the majority while the females were only 13.41%. The ratio of male to female is approximately 6:1. [Table 1]

The age group of 31-40 yr had the maximum number of cases (30.7%), coming next to it were the 41-50 yr and 21-30 yr age groups, with 26.8% and 16.2% cases respectively. The least number of cases were noted in the age group <10 years and 11-20 yr, 2.7% in each. [Table-2]

In the month of April, the maximum number of cases were encountered (15.1%) followed by May & October, 10.6% each; while in the month of November, the least number of cases were seen (4.4%). [Table-3, Fig.-2]

Regarding the analysis of the place from where the bodies have been retrieved the majority of cases were found on sides of the roads, footpaths, streets or highways (39%) followed by in the canals (26%), below subways/ flyovers (19%), near railway tracks (10%), and in 6% of cases the body was located near under construction building. [Fig.- 3]

The manner of death was natural in 106 cases (59.22%), unnatural in 71 cases (39.67%). Out of the natural deaths the majority of which included were pneumonia, tuberculosis and myocardial infarction; the unnatural causes like road traffic accidents, rail run over, drowning and burns. No cause of death could be established at autopsy in 1.1% of the cases. [Fig-4, Table-4]

The police had completed their formalities regarding photograph and publication of notice in dailies (Hue and Cry/ Missing person notice) in all the cases. To facilitate the process of identification the autopsy surgeon had handed over clothes in all cases where the body was found with clothes, finger pulps of all the ten fingers in separate sealed packets in along with preserved sternum/long bone, finger nails and scalp hairs for DNA analysis/blood in gauze piece for cross matching in all cases in which it was requested by the investigating officer.

DISCUSSION

At any medico legal centre globally the post-mortem examination of unidentified bodies comprises a small but a very significant and important group. Paulozzi et al had done a phenomenal work in this field.[27] The procedure being followed by the law enforcement agencies for identification in unknown deaths is more or less same in different states across the country.

During the period under consideration in the present study, unidentified dead bodies comprised 7.67% of the total autopsy load of the department. This is similar to the patterns in other countries [28-32] as well as in India.[33,34,35]

The reason for this high number is metropolitan nature of the city where the study is being conducted. A large number of beggars, homeless, unwaged individuals take shelter on footpaths and under flyovers.

In this present study estimation of the number of individuals which were identified later after the conclusion of autopsy could not be ascertained as there exist no system of informing the medico legal centre about their Identity if it gets established at any later stage by law enforcement agencies. However many studies have estimated them.35 But that is also far below the statistics in some of the developed countries.[36-38] This is due to the fact that only limited procedures to identify the unknown are done routinely and no database of those unidentified exist as in developed countries.

In this study, male were 86.59%, with the ratio of male to female being 6:1. This is due to the fact that they are the one who venture out more for the purpose of jobs as migrant or as rover / vagabond without any social/economical support and ending up on the pavements of these cities, expose themselves to risky environment and die as a consequence thereof. National studies done in Maharashtra, Kolkata & Chandigarh[33-35] as well as International studies[28-30] The major causes of death that which was identified was natural diseases (n = 106, 59.21%) uppermost being the pathology of respiratory system (n = 76, 42.45%). These results are comparable to the studies conducted in other metropolitan cities.[34,35,40] The reason for maximum number of natural disease deaths is since most of them do not have any home and are exposed to extreme weather conditions.

No cause of death could be established at autopsy in 1.1% of the cases which is much lower as compared to international literature (18.7% to 24.5%).[27,28]

In the month of April, the maximum number of cases were encountered (n=27, 15.08%) followed by in the month of May (n=19, 10.61%) which are a relatively hot and humid month and in the month of November least number of cases was seen (n = 8, 4.4%). Hence its clear that environmental conditions affects the number of deaths. Similar findings were reported by Yadav A et al.[40]

A total of 02 (1.11%) bodies were of female foetuses which were disposed of illegally indicating towards social menace of female foeticide and illegal abortion. The same problem was also highlighted by Yadav A et al.[40]

Regarding the analysis of the place from where the bodies have been retrieved in the majority of the cases was roads, footpaths, streets or highways (39%) which is similar to other studies done in metro cities.[34,35,41] This indicates that a large number of homeless people (beggars etc) who are below the poverty line reside on the streets of these cities due to lack of proper social support.

Conclusion & Recommendations

William E. Gladstone (Prime Minister of England, 1892-1894) once said "Show me the manner in which a nation or community cares for its dead and I will measure, with mathematical exactness, the tender mercies of its people, their respect for the law of the land and their loyalties to high ideals." It is therefore imperative that as a progressive nation the unidentified are given their due.

The following steps will go a long way in establishing their Identity.

Recommendations:

1. Need for more similar studies to gather data to know the true extent of problem.

2. Creation of Unidentified dead bodies and Missing person data bank as per the recommendations of The International Committee of the Red Cross (ICRC). A Zonal Integrated Police Network project (ZIPNET) which has been developed in few states needs to be integrated with other states and union territories to share information in real time about unidentified and missing individuals.

3. Use of colour photograph in newspaper as per WHO guidelines. [Fig.-5] and improved infrastructure and body storage facilities.

4. Team approach: The Forensic Science experts in field of forensics which may include odontologists, anthropologists, radiologists, finger print experts, DNA experts etc must be involved in the identification process.

5. Creation of a National DNA database.

Limitations

Due to record based and its retrospective design in very few cases not all the information pertaining to our study format was available for comparison and compilation.

Declaration of conflicting interests

None

Figures & Tables:

Figure 1: Number of unidentified bodies compared to total case load between 2009 and 2017.

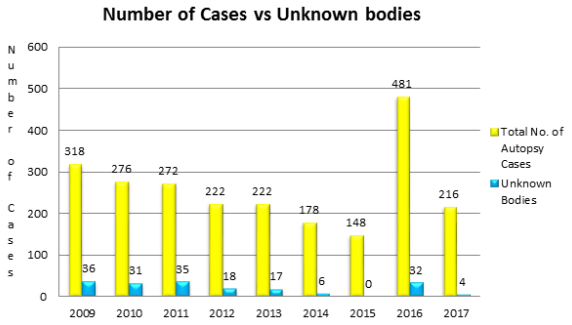


Table 1 : Distribution by Gender

Year	Total No. of Unknown Cases	Male	%	Female	%
2009	36	33	91.67	3	8.33
2010	31	24	77.42	7	22.58
2011	35	28	80.00	7	20.00
2012	18	16	88.89	2	11.11
2013	17	17	100.00	0	0.00
2014	6	3	50.00	3	50.00
2015	0	0	0.00	0	0.00
2016	32	30	93.75	2	6.25
2017	4	4	100.00	0	0.00
Total	179	155	86.59	24	13.41

Table 2 : Distribution by Age

Age Group	2009 (n = 36)		2010 (n = 31)		2011 (n = 35)		2012 (n = 18)		2013 (n = 17)		2014 (n = 6)		2015 (n = 0)		2016 (n = 32)		2017 (n = 4)		Total (n = 179)	
	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%
< 10 Years	1	2.7	1	3.2	0	0	1	5.5	0	0	1	16.6	0	0	1	3.1	0	0	5	2.9
11 - 20 Yrs	0	0	1	3.2	3	8.5	1	5.5	0	0	0	0	0	0	0	0	0	0	5	2.9
21 - 30 Yrs	5	13.9	2	6.5	4	11.5	1	5.5	4	23.6	1	16.6	0	0	9	28.2	3	75	29	16.2
31 - 40 Yrs	14	38.9	10	32.2	10	28.5	6	33.4	3	17.6	3	50	0	0	9	28.2	0	0	55	30.7
41 - 50 Yrs	9	25	13	41.9	11	31.5	3	16.6	4	23.6	1	16.8	0	0	6	18.7	1	25	48	26.8
51 - 60 Yrs	5	13.9	2	6.5	4	11.5	2	11.2	3	17.6	0	0	0	0	6	18.7	0	0	22	12.2
61 - 70 Yrs	2	5.6	2	6.5	3	8.5	4	22.3	3	17.6	0	0	0	0	1	3.1	0	0	15	8.3
> 71 Yrs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 3 : Distribution by Month

Month	2009 (n = 36)		2010 (n = 31)		2011 (n = 35)		2012 (n = 18)		2013 (n = 17)		2014 (n = 6)		2015 (n = 0)		2016 (n = 32)		2017 (n = 4)		Total (n = 179)	
	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%
Jan	4	11.2	2	6.5	5	14.3	3	16.6	0	0	0	0	0	0	0	0	0	0	14	7.9
Feb	3	8.4	2	6.5	2	5.7	2	11.1	2	11.8	1	16.7	0	0	1	3.1	0	0	13	7.2
Mar	2	5.5	1	3.2	4	11.5	4	22.2	0	0	0	0	0	0	5	15.7	1	25	17	9.4
Apr	9	25	5	16.1	2	5.7	1	5.6	2	11.8	3	50	0	0	3	9.3	2	50	27	15.1
May	1	2.7	2	6.5	6	17.1	1	5.6	1	5.8	1	16.6	0	0	7	21.8	0	0	19	10.6
Jun	2	5.5	0	0	3	8.5	1	5.6	3	17.7	0	0	0	0	1	3.1	0	0	10	5.5
Jul	2	5.5	4	12.9	2	5.7	0	0	1	5.8	0	0	0	0	5	15.7	0	0	14	7.9
Aug	3	8.4	3	9.6	2	5.7	1	5.6	4	23.7	0	0	0	0	1	3.1	1	25	15	8.3
Sep	2	5.5	1	3.2	4	11.5	0	0	0	0	0	0	0	0	5	15.7	0	0	12	6.7
Oct	3	8.4	5	16.1	5	14.3	0	0	2	11.8	0	0	0	0	4	12.5	0	0	19	10.6
Nov	2	5.5	2	6.5	0	0	2	11.1	1	5.8	1	16.7	0	0	0	0	0	0	8	4.4
Dec	3	8.4	4	12.9	0	0	3	16.6	1	5.8	0	0	0	0	0	0	0	0	11	6.4

Figure 2: Seasonal variation of unidentified bodies between 2009 and 2017.

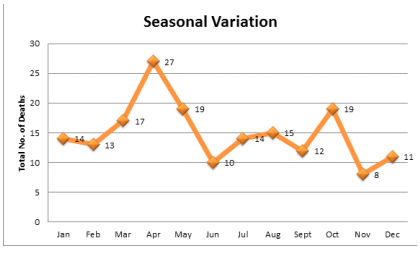


Figure 3: Data on location of retrieval unidentified bodies between 2009 and 2017.

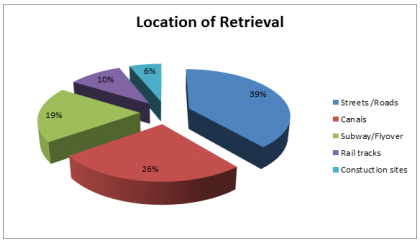


Figure 4: Depicting the percentage of Manner of Death in unidentified bodies.

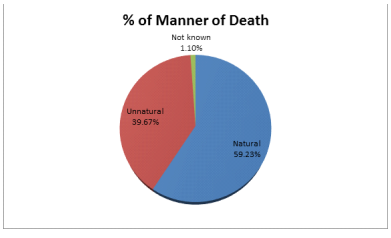
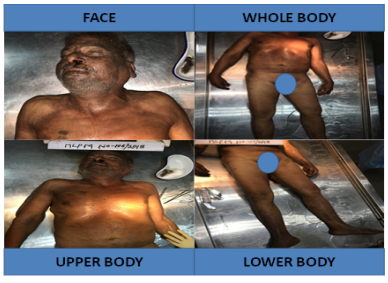


Table 4 : Cause of Death

Natural Cause	Number	% Out of Natural	% Out of Total
Respiratory Disease	76	71.69 %	42.45 %
Cardiovascular Disease	21	19.81 %	11.73 %
Immaturity	5	4.71 %	2.79 %
GIT / Hepatic	4	3.77 %	2.24 %
Total	106		59.22%

Unnatural		% Out of Unnatural	% Out of Total
Drowning	30	42.25 %	16.75 %
Head injury	20	28.16 %	11.17 %
Polytrauma	12	16.90 %	6.71 %
Burns	5	7.08 %	2.79 %
Hanging / Strangulation	2	2.81 %	1.11%
Murder	1	1.40 %	0.55 %
Decapitation	1	1.40 %	0.55 %
	71		39.67 %
Decomposed / Could not be given	2		1.117318
	2		1.11 %
TOTAL	179		100 %

Figure 5 : WHO guidelines on Photography of bodies for Identification.



As per WHO guidelines on 'Disposal of Dead Bodies in Emergency Conditions' minimum photograph set required for visual identification is four, those include photo of whole body, face, upper body and lower body (as shown). Key feature photograph like tattoo mark may also be taken separately for cross check identification.

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