

## **An Investigation in to the Deaths of Homeless Unknown Persons (HUPs) at New Delhi District**

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### **Abstract**

**Background:** India is a significant host of deaths of homeless unknown persons (HUPs) caused by various reasons. The identification of risk factors, sources and timely interventions has always been important in reducing the chances of morbidity, mortality among them.

**Objective:** To determine the epidemiological mortality profile such as magnitude, cause & manner of death, seasonality and year wise distribution of their deaths.

**Materials and Methods:** An autopsy based study was conducted at Lady Hardinge Medical College, New Delhi for a total period of 5 years (Jan-2006 to Dec-2010).

**Results:** Out of total 749 cases, 536 cases died due to any of natural and 150 due to any of the unnatural manners. Among natural ones, pulmonary pathology was reported in 509 cases. In this study, the majority of the 676 (90.25%) cases belonged to the male sex and to the age group of 41-50 years.

**Conclusion:** The study population is a vulnerable segment of the society falling victims to both natural and unnatural events. They are a significant harbour to pulmonary infections and lead to spread it to the other people of the society, thereby draw an urgent public health intervention and a policy response for the prevention of same.

**Keywords:** Homeless Unknown Person (HUP); Natural death; Unspecified pneumonitis; Pulmonary tuberculosis

### **Introduction**

India is one of the fastest growing economies in the world. The present form of economic development in a globalised world has created a divide between rich and poor leaving behind the poor on the streets as homeless unknown persons (HUPs). Homeless are defined as- those who live in the open or roadside, pavements, in hume-pipes, under fly-overs and staircases, or in the open in places of worship, man daps, railway platforms etc. As per the census 2011 of India around 1,21,05,69,573 of people belong to this category [1]. This is vulnerable population with lack of basic facilities required for survival and susceptible to unattended death because of various reasons at a relatively younger age.

High mortality among the homeless populations at relatively younger age is not only the problem in India but a global one affecting almost all the cities across the world. The age-adjusted mortality rate among the homeless people was reported to be three and half times greater than that of general population [2]. Data from the National Crime Records Bureau, India reveals that a shocking 2,22,446 bodies were passed off as "unidentified" by the police in the past six years i.e. 102 dying unidentified every day in India [3]. In 2010, nearly 2,000 persons died 'unidentified' in the state of U.P. [4].

Delhi is the capital city of India and divided in to 9 districts with the total population 16753235 as per 2011 census. Population of New Delhi in 2011 was 142,004, with -20.7% decadal growth rate of population. Population density wise Delhi stands 1<sup>st</sup> (9340 people per square kilometre) among the states and UTs of India (Min. of Home Affairs, Govt. of India 2011) [5]. There are over 67,000 homeless persons in Delhi, of whom 15 percent are women and 10 percent are children [6].

Such cases pose various difficulties in handling and investigating the mystery behind such deaths. The Major queries before the investigating officers are -Who are these people? What has happened to them? Who are the culprits for their death? How did they die? These are some questions which often remained unanswered because of their identity crisis. The accurate identification is mandatory for establishment of corpus delicti (body of the crime) [7]. In India police adopt a procedure to identify homeless unknown persons by giving advertisement in various media and putting posters on the public places. The police also share information with other police stations to establish their identity.

The dead body is usually kept for a three days (72 hours) in the cold storage in mortuary with the hope of finding some clue about their identity, failing which it is disposed of after autopsy examination, preserving certain specimens for identification later on e.g. Fingerprints, photographs, clothes, tattoo or scar marks and tissue for DNA typing etc. However, failure of establishing the identity leads to failure to solve the mystery behind a large number of such deaths and contribute to the increasing burden of unsolved crime for law & order enforcing agencies.

**Aims and Objectives**

This study is aimed to estimate the magnitude of various causes and manner of death in the milieu of homelessness unknown persons (HUPs) to draw the attention on this neglected segment of the society and necessary action in the hands of law & order enforcing agencies and public health policy makers to devise appropriate safety measures to prevent the unattended deaths among them and also to find out the reasons of deaths having any impact on the other persons of the society.

**Material and Methods**

It is a 5 years’ study (1<sup>st</sup> January 2006 to 31<sup>st</sup> December 2010) based upon the analysis of medico legal autopsies conducted at the Department of Forensic Medicine & Toxicology, Lady Hardinge Medical College, located in New Delhi district at Delhi. Because almost all deaths among homeless unknown persons are unattended so they are registered as medico-legal cases to rule out any kind of foul play.

The status of homelessness of the cases was determined and reported to the attending autopsy surgeons by the police. The data regarding age, sex, year, season, manner and cause of death was collected, compiled, tabulated and certain observations are drawn.

**Results**

In out of total 2773 autopsies, conducted between a period between 1<sup>st</sup> January, 2006 and 31<sup>st</sup> December, 2010, in the morgue of Lady Hardinge Medical College, New Delhi, the 749 deaths were belonged to homeless unknown persons (HUPs) whose identity could not be established till the time of autopsy procedure and handing over of dead bodies to the police. The majority of victims 676 cases (90.25%) were of male sex and the remaining 73 cases (9.75%) of female sex (Table 1). The majority of the deceased victims belonged to the age group of 41-50 years (27.77%), followed by 31-40 years (24.43%) and 21-30 years (21.23%) and together they constituted a total of 73.43% cases.

Sex	Natural deaths	Unnatural deaths	Total
Male	499	177	676
Female	37	36	73
Total	536	213	749

**Table 1:** Distribution of natural and unnatural deaths among homeless unknown persons (HUPs).

The principal aetiology was a natural cause in 536 cases (71.56%), followed by unnatural cause in 213 cases (28.43%). Among the natural ones, unspecified pneumonitis was reported in 387 cases (72.20%), followed by pulmonary tuberculosis in 122 cases (22.76%) (Table 2). And all types of pulmonary infections contributed a total 509 (67.96%) deaths (Figure 2). Out of 213 (28.43%) unnatural deaths, a maximum 91 cases (42.72%) were victims of transport accidents, followed by a total of 63 cases (29.57%) of suspected poisoning, where viscera samples had been preserved for chemical analysis to confirm (Table 2).

S. No	Cause of death	Brought dead/ unattended deaths	Hospital deaths/ attended deaths	Total deaths
1	Transport accidents	67	25	92
2	Fall from height	5	1	6
3	Burn	3	2	5
4	Electrocution	5		5
5	Unspecified pneumonitis	380	7	387
6	Pulmonary tuberculosis	118	4	122
7	Coronary artery diseases	9	-	9
8	Intracranial haemorrhage	2	-	2
9	Hanging	5	-	5
10	Strangulation	5	-	5
11	Stab injury	2	2	4
12	Gunshot injury	1		1
13	Result pending for want of viscera analysis report	56	7	63
14	Renal failure	1	-	1
15	meningitis	7	-	7
16	Still born	12	-	12
17	Assault (Blunt force)	15	-	15
18	Liver Cirrhosis	3	1	4
19	Oesophageal varices	4	-	4
	Total	700	49	749

Table 2: Distribution of brought dead and hospital deaths among homeless unknown persons(HUPs).

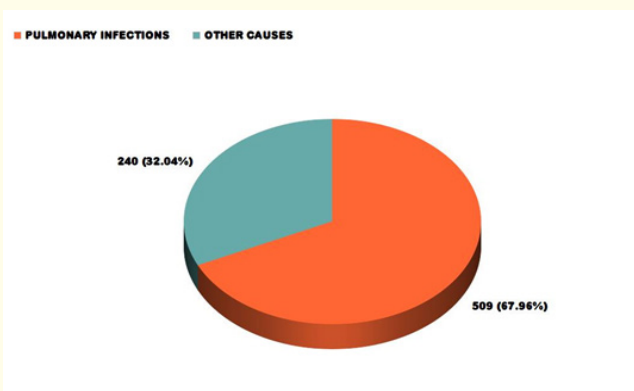


Figure 2: Proportion of Deaths due to Pulmonary out of total deaths among homeless unknown persons (HUPs).

A total of 700 cases (93.45%) belonged to brought dead category, meaning their deaths were unattended during their last part of their lives and brought dead in casualty for referral to mortuary for autopsy examination. However, 49 cases (6.54%) were attended and admitted in the hospital where they died during the course of treatment (Table 2).

The year wise distribution of data indicates a maximum of 280 (37.38%) cases in 2010 (Figure 1). The month wise distribution of deaths according indicates a maximum 109 (14.5%) deaths in September and lowest 16 deaths (2.13%) in the month of March (Figure 3).

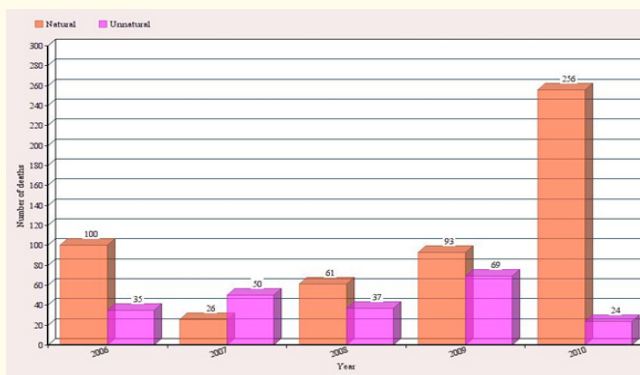


Figure 1: Distribution of Deaths year wise in homeless unknown persons (HUPs).

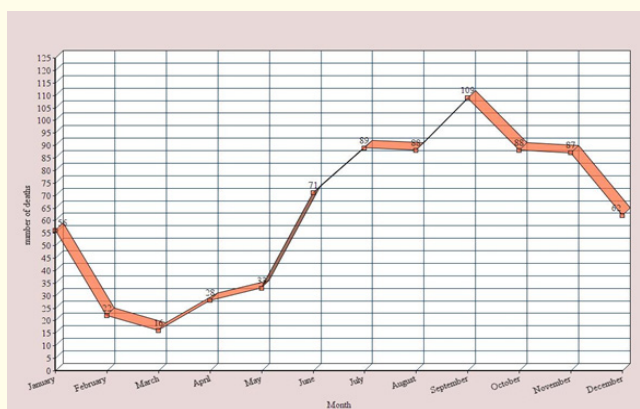


Figure 3: Distribution of deaths month wise among homeless unknown persons (HUPs).

### Discussion

The deaths of homeless unknown persons (HUPs) made a significant proportion of almost 27% of all the deaths brought as medico-legal cases with the predominance of male sex (90.25%), this figure is in accordance with the study of Kumar A., *et al.* [8] (87.75%) and study of Kumar S., *et al.* [9] (69.99%), carried out in Delhi and North India respectively. The results were also in accordance to international studies carried out by Altun G., *et al.* [10] and Büyük., *et al.* [11], that showed the preponderance of male cases (91.27%). In present study the most of the cases (27.36%) were in the age group of 40-49 years, similar as study of Altun G., *et al.* [10] (27.95%). Whereas in Study of Kumar S. [9], the maximum numbers 47.24%) were in age group 41-60 years, and in study of Kumar., *et al.* highest deaths (31.3%) were reported in age 31-40 years.

In present study there seems to be an increase in the number (14.55%) of deaths in September month; however, in study of Kumar A., *et al.* [8] and Kumar S., *et al.* [9] were highest number (38.64%) & (69.70%) respectively reported in rainy season (i.e. to be July to Septem-

ber in India), however study of Philadelphia 53% of deaths were occurred during summer months [2], and Altun G., *et al.* [10] reported the maximum deaths (59.38%) during winter season. Further, Büyük., *et al.* [11] reported that high percentages of the cases living outdoors are open to every danger both environmental and criminal.

Twelve studies conducted between the period 1971 and 2006 from 11 countries/regions around the world (South Western Cameroon, South Africa, India, Hong Kong, Japan, Kuwait, Spain, UK, Ireland, Russia, and Mongolia) were reviewed. A seasonal pattern of tuberculosis with a mostly predominant peak is seen during the spring and summer seasons in all of the countries [12]. In the present study the high incidences of death are reported in the months between June to November with highest number of cases in the month of September.

In the present study, natural diseases played important role in 71.56% cases. The pulmonary pathology was found as the leading cause of death and contributed 67.95% cases of total 71.56% of natural death cases. Out of total pulmonary infectious disease, unspecified pneumonitis constituted 51.66% and pulmonary tuberculosis 16.28% of cases. The pulmonary infectious diseases are more prevalent in unhygienic, bad living conditions and lack of proper health care facilities. These findings are in concurrence with study of Kumar A., *et al.* [8] and Yalcin., *et al.* where natural events were the main cause of death in 61.36% & 60.26% cases respectively. Study of Kumar S., *et al.* [9] showed accident as most common manner of deaths in 34.64% cases followed by suicide in 33.51% and natural cause stand third 29.25% which was contrary to the present study. The figure was different in the other studies; in Homburg, 43.8% were unnatural deaths [13] and in San Francisco, the majority (52.2%) of deaths were due to drug poisoning [14].

This study supports the intuitive hypothesis that homeless people die younger and have a higher mortality rate than the general population. The study by Kumar S., *et al.* [9] found 48.81% deaths primarily due to chronic lung diseases. Paulozzi L.J., *et al.* [15] report that acute respiratory infection; pneumonia was estimated as cause of death in 60% cases. Alcohol was an important risk factor and social isolated in the first place in homeless in Russia [15]. Randy Hanzlick., *et al.* [16] carried out a study of homeless deaths which estimated that 98% were man, 55% were due to natural causes and 42% resulted from injuries. Further, in this study 93% of the cases were found dead whereas 80% of the cases were found dead and as homicides (3.54%) [8].

Tuberculosis (TB) continues to remain one of the most pressing health problems in India. India is the highest TB burden country in the world, accounting for one fifth of the global incidence - an estimated 1.96 million cases annually. Approximately 2.9 million people die from tuberculosis each year worldwide; about one fifth of them in India alone [17].

Oshaka T., *et al.* [18] reported 44.8% deaths due to Tuberculosis. Laurie D., *et al.* [19] reported that homeless individuals had a higher than expected prevalence of obstructive lung diseases and a leading cause of death in homeless population of United States) and pneumonitis was the commonest cause of natural death Oshaka T., *et al.* [18]. Further, 15% deaths were reported due to accidents in concurrence to present findings; 12.14% deaths of accidents. However, in study of Kumar A., *et al.* [8] and Kumar S., *et al.* [9] reported accidental deaths in 31.70% and 34.64% cases respectively.

The age adjusted annual mortality rate was 3.5 times higher among the homeless people than in Philadelphia's general population; mortality was particularly high among white men and substance abusers. Homeless men in Boston, aged 18 to 24 years and 25 to 44 years were 5.9 and 3.0 times more likely to die respectively, than their counter part in general population [20]. International literature demonstrates that homeless adults have mortality rates 3.5 - 4 times that of the housed population [20] and Irish Literature demonstrates that homeless people also suffer from higher morbidity from both conditions that are not uncommon in the general population [21].

The high incidence and prevalence of pulmonary infections particularly tuberculosis contribute to a major burden of the health diseases. The resources (Manpower, Material and Money) of the country are diverted to control this menace thereby adversely affect the social and economic development of the nation. It is a major barrier to social and economic development. An estimated 100 million work-days are lost due to illness. The society and the country also incur a huge cost due to TB-nearly US\$ 3 billion in indirect costs and US\$ 300 million in direct costs [22].

While Homeless unknown persons (HUPs) are simply ignored with regard to their social and economic aspect by society and policy makers but they are very much part of the population of the country which is vulnerable to both natural and unnatural events and specially the different types of pulmonary infections with a significant chance of spread to other segment of the society. This may add up to the overall mortality and crime rates of the country and enhancing the chances of other segment of the society getting affected by pulmonary infections as many of the times these two segments often come in to the contact.

### Recommendations

1. The homeless unknown persons are a vulnerable segment of our society and often overlooked by family members and public health providers. Rather they are very much part of the society and deserve due care and attention to reduce high proportion of unattended deaths.
2. There is lack of definite studies regarding the total magnitude and numbers of such type of persons in India. Further Lack of adequate data and limited resources especially in developing countries hamper proper rehabilitation of such people. Therefore, researches must be promoted to get a data base to draft the policy and programmes accordingly to target the beneficiary.
3. Such type of persons usually lack access to the preventive, curative and rehabilitative care due to lack of unawareness as well as financial and social barriers. These barriers must be removed.
4. This is the vulnerable segment of the society which is on continuously compelled to live in a social and environment conditions leading to their ill health and deaths due to pulmonary infections and subsequently they expose rest of the population to the risk of secondary infections. Unless this segment is targeted and due care is given to them it is difficult to interrupt the significant source of pulmonary infections.
5. A large proportion of these deaths are preventable and pulmonary infections are curable through the adequate coverage by this segment of society through the existing Public health intervention strategies available for rest of the population.
6. There is need to expand the outreach of Revised National tuberculosis control programme (RNTCP) to this segment of the society as it is out of coverage at present.
7. There is need to make a proper policy for this segment by ensuring its rehabilitation to regulate law and order situation as well preventing adverse impact on social and economic development of the nation.

### Conclusion

The present study has highlighted the burden and prevalence of pulmonary infections and its seasonality among homeless and unidentified persons at New Delhi district. Various factors such as social, political, cultural demographic, economic, environmental, and nutritional play a significant role in deciding the prevalence of homeless unknown persons (HUPs) in the society as well as the magnitude of their deaths by some adverse event viz. Natural and unnatural. The study strongly recommends towards a major improvement of these determinants and further research, which could be helpful for strengthening the policy and program activities needed for prevention, rehabilitation and control of magnitude of homeless unknown persons (HUPs) and their untimely deaths due to various pulmonary infections .It is essential to interrupt the chain of spread of pulmonary infections to the other segment of the society as it contribute to significant mortality in this segment of the society and cannot be ignored.

### Limitations

1. As this segment was homeless and unknown so not much personal and family history was available and the study largely banks upon the police for the credibility information obtained.
2. This is the study conducted at Lady Hardinge Medical College, Delhi. The Delhi is a metropolitan city which has a population with different epidemiological characteristics than the other cities and villages so the result cannot be generalised to them. However, it may be compared with other districts of Delhi and similar metropolitan cities.



3. Lady Hardinge Medical college is not the only centre at New Delhi district dealing with such type of cases so overall data may differ on taking in to consideration of all such types of cases at various centres of New Delhi District.

### Conflict of Interest

The authors declare that there is no conflict of interest regarding the publication of this manuscript and own full responsibility in case any conflict arises after publication of the same.

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