Original Research Article

Analysis of Geriatric Deaths: An Autopsy Study

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Abstract

Introduction: With the increase in medical advances and technology, people are living longer, and the percentage of the geriatric population is on the rise. However, this subset of population of their own set of problems and cannot be treated as others.

Material and Methods: An autopsy based retrospective study on deaths of geriatric population was conducted for the period of 1 year (January 2023- December 2023) in a medical college hospital.

Results: Out of all autopsies done during the period, geriatric cases were 17% (n= 34), with male predominance (n= 29). Among the deceased, the highest was in the age group 60-70 years (n= 23), next being 70-80 years (n= 9) and least was in 80-90 years (n= 2).Natural death was most common among them (n= 15), followed by accidental deaths (n= 13), suicidal death being third (n= 5) and homicide being least (n=1). Among natural deaths, death due to cardiovascular causes was the highest (n= 12), followed by deaths due to respiratory system (n= 3). Among unnatural deaths, Road traffic accidents were the highest (n=12), suicide by poisoning and drowning were 2 cases each.

Conclusion: The study shows natural death is more common among geriatric population, with most dying due to cardiovascular causes. The study also shows that road traffic accidents are of significant importance when it comes to geriatric deaths, amounting to the same number of deaths due to cardiovascular causes. These types of deaths can be prevented.

Keywords: Geriatric, Autopsy, Natural Death, Unnatural Death

Introduction:

With increase in medical advances, medical technology and improvements in socio-economic conditions, the life expectancy is increasing. This means people will get older and older and yet survive for long periods.

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Geriatrics is the term used in the medical field to denote elderly people. The term geriatrics originates from the Greek "geron" meaning "old man", and "iatros" meaning "healer". It aims to promote health by preventing, diagnosing and treating disease in older adults.[1]

The number of elderly people or the older population is on the rise. According to WHO, all countries face major challenges to ensure that their health and social systems are ready to make the most of this demographic shift. It is estimated that by 2050, 80% of older people will be living in low- and middle-income countries. By 2030, 1 in 6 people in the world will be aged 60 years or over. Between 2015 and 2050, the proportion of the world's population over 60 years will nearly double from 12% to 22%.[2] The rise in number of these elderly people is more pronounced in highly populated countries like India where it is estimated that by 2050, nearly 20% of their billion plus population will be elderly. Infact, the population of people aged80+ years is expected to have a phenomenal increase by around 279% between 2022 and 2050.[3]

The elderly people or the senior citizens as they are colloquially called in India are a new subset of vulnerable population. They do not have fixed income, they are not generally covered under medical insurances, and they often suffer from multiple diseases needing long term multiple medications. The complications due to non-communicable diseases will keep on increasing with duration of disease, thus elderly people will have more and more complications as they age further.

The problems faced by geriatric population are different than other subsets of population, thus needing further studies. They pose a major public health challenge, especially in developing countries where their health care system is already very constrained. The mortality profile among this population might shed some light into implementing programmes catered specifically for the elderly. However, most of these studies done are for natural death where the statistics are collected from death certificates issued by the treating doctors. There is a dearth of literature on elderly mortality based on medico-legal autopsies. Not many studies have been conducted on this subject, especially in India. Thus, the present study was carried out to investigate the mortality profile of elderly population, subjected to medicolegal autopsies in a tertiary care center in South India.

Despite its importance, there is a significant research gap in geriatric autopsies in Rural Bengaluru. The current literature highlights the need for improved understanding of the disease patterns and causes of death, enhanced health care policies and clinical practices. Raising awareness about the importance of geriatric autopsies and its benefits can provide valuable data for further research and quality improvement.

Materials and Methods

This descriptive study was conducted in the Department of Forensic Medicine and Toxicology, Akash Institute of Medical Sciences and Research center, Devanahalli, Bengaluru rural after obtaining due clearance from the institution ethics committee. The retrospective study was for the period of one year from January 2023 to December 2023.Inclusioncriteria (all autopsies done on people aged 60 years and above) and exclusion criteria (autopsies on people aged less than 60 years and mutilated dead body) were applied. Postmortem reports, Inquests and ancillary reports were taken, the data was collected and analyzed.

Results

A total of 200 autopsies were conducted in this time period. Among them, autopsies conducted over deceased aged 60 years, or more were 17% (n =34).

Among them, majority were male, amounting to 85.29% out of autopsies done on elderly population (n=29). Females amounted for 14.7% (n= 5).

The age group among the elderly was diverse as well. The highest was in the age group of 60-70 years, with 67.6% (n=23), followed by 71-80 years with 26.47 % (n= 9) and 81 years and more amounted to 5.88% (n= 2). Mean age was 68.47years and standard deviation was7.33 years.

Table 1: Sex and age group distribution.

Sl No	Age group in years	Male (%)	Female (%)	Number (%)
1	60-70	19(55.88)	4(11.76)	23(67.6)
2	71-80	8(23.52)	1(2.94)	9(26.47)
3	81 and above	2(5.88)	0 (0)	2(5.88)
	TOTAL	29(85.29)	5(14.7)	34

Regarding manner of death, natural deaths were more common, amounting to 44.11% (n= 15) but accidental deaths came in very close with 38.23%(n=13). Third most common was by suicides, amounting to 14.7%(n=5) and least was homicide with a single case amounting to 2.94%.

Table 2: Manner of death

Sl No	Manner of death	Number	%
1	Natural	15	44.11
2	Unnatural- accidents	13	38.23
3	Unnatural- suicides	5	14.7
4	Unnatural- homicides	1	2.94
	TOTAL	34	100

In natural deaths, death due to Coronary artery disease was seen in 12 cases (35.29%) and disease of lungs was seen in 3 cases (8.82%).

Among all the accidents, 12 were due to road traffic accidents (35.29%) and one was due to unknown animal bite (2.94%). In suicides, 2 had taken poison (5.88%), 2 had drowned (5.88%) and one had cutthroat injury (2.94%). Only a single homicide case was noted in the study population during the study period (2.94%).

Table 3: Cause of death

Sl No	Cause of death	Number	%
1	Coronary artery disease	12	35.29
2	Disease of lungs	3	8.82
3	Road traffic accidents	12	35.29
4	Unknown animal bite	1	2.94
5	Poisoning	2	5.88
6	Drowning	2	5.88
7	Suicidal cutthroat	1	2.94
8	Stab injury to Neck	1	2.94
	TOTAL	34	100

Discussion

In 2019, the global population aged 60 years and over (older adults) was just over 1 billion people, representing 13.2% of the world's total population of 7.7 billion. That number is 2.5 times greater than in 1980 (382 million) and is projected to reach nearly 2.1 billion by 2050.[2] This shows how as we progress in medicine and related fields and increase socio-economic reforms, the number of elderly population will keep on increasing, perhaps even exponentially. India's elderly population is growing rapidly, with a decadal growth rate of 41%and by 2046, the elderly population in India will surpass the population of children (0 to 15 years old).[3] It is high time we started caring about this vulnerable population. Mortality statistics are one of the methods of collecting data for public health issues. Though many have conducted studies into death in geriatric population, most concentrate on natural deaths and not consider medico-legal autopsies for the data collection. And such studies are even rarer in India where there is much need to gather such data.

This descriptive retrospective study was done on medico-legal autopsies done ongeriatric population in a medical college hospital in South India to know the burden and the demographic profile.

Geriatric medicolegal autopsies in our study amounted to 17% of all medicolegal autopsies conducted during the period. This is consistent with other studies conducted like Cetin S et al[4] in Turkey where percentage was 16.8%. The percentage is higher than other studies like Kumar RP et al[5]in Tumkur, southern India where geriatric deaths undergoing medicolegal autopsies was 7.56% or the study done in Adana, Turkey by Hilal A et al[6] where the percentage was 8.1% or Bhuyan BR et al[7]in Eastern India where percentage was 12.6%.

The predominance for male is evident in the study, with males accounting to 85.29%. Higher percentage is attributed to males travelling more than females and proximity of the center to airport and highways. Male predominance was seen in study done in eastern India by Bhuyan BR et al[7]where 72.2% of geriatric autopsies were conducted on males. Male predominance is seen in studies done in other countries too. For example, in study by Hilal A et al[6] in Adana, Turkey, male predominance was around 73.8% or in study by Turkoglu A et al[8]in Elazig, Turkey, where males amounted to 73.6% or in the study done in Sivas by Beyaztas FY et al[9] where males amounted to 73.2%.

Most of the cases in the current study were in the age group of 60-70 years (67.64%). This is higher than other studies like Bhuyan BR et al[7]where 60-69 years constituted 58.8%.

This study shows that nearly half of the cases coming to the medico-legal autopsy were due to natural causes. The proximity to aninternational airport and any deaths there, though it looks like due to natural causes, needing an autopsy might be the cause of such high numbers. This is still consistent with study done in Turkey by Cetin S et al[4] where natural deaths amounted to 49%.However, it is not consistent with study done by Bhuyan BR et al[7] where natural deaths amounted to just 9% and accidental deaths were more common amounting to 64.1% or study done by Akhiwu WO et al[10] in Nigeria where natural deaths were just 27.3% or study done by Kumar RP et al[5] where natural deaths formed just 26.58% or in study done in Ankara by Akar T et al[11] where natural deaths amounted to 42.37% of geriatric case autopsied or the study by Hilal Aet al[6] where natural causes amounted to 42.7%

Among natural deaths, death due to coronary artery disease was highest, with 35.39% and next was respiratory system (8.82%). This is consistent with other studies like Akar T et al[11]where diseases due to cardiovascular system were major causes in the natural deaths. In study by Berlzanovich AM et al[12] in Vienna, the major cause of death was due to cardiovascular system and next was respiratory illness. Even the study done by ShokraniB et al[13] shows the common causes were cardiovascular diseases and infectious diseases. However, in study by Turkoglu A et al[8], causes of natural deaths were myocardial infarctions and cerebrovascular diseases.

Accidents were most common among unnatural causes, with road traffic accidents taking up the majority. The presence of highways might account for the high number of accidents. The elderly often suffer from vision problems and have slowed reflexes, thus the probability of them suffering an accident is more. This is similar to the study done in SriLanka by Vadysinghe AN et al[14,] where accidents amounted to 62.1% of unnatural deaths. In a study by Turkoglu A et al[8], accidents were commonest with road traffic accidents and falls claiming the majority. In study done by Akhiwu WO et al[10] in Nigeria, road traffic accidents were 50.9% of autopsied geriatric cases.

Old age is reported as a predictor of completed suicide. Moreover, late-life suicides account for nearly 18% of all suicidal deaths. Major depression and physical illnesses were reported to play an important role among older suicide completers[11]. Suicides are comparably lower in this study amounting to 14.7% of all cases. This is considerably lower than in other studies like Bhuyan BR et al[7] (25%) or Kumar RP et al[5] (32.28%) but higher than few studies like Cetin S et al[4] (11.9%) Turkoglu A et al[8] (9.8%) or Akhiwu WO et al[10](1.8%). Poisoning and drowning were preferred equally and only one attempted suicidal cutthroat in the current study. In a study done by Beyaztas FY et al[9] in Sivas, hanging and poisoning were common methods of committing suicides. But in study by Kumar RP et al[5], hanging and drowning were more preferred methods to commit suicides.

Homicides in the current study are very less, amounting to 2.94% of all geriatric cases autopsied. This is still lower than few studies done before like Cetin S et al[4] (6%),

Conclusion

In the present study, autopsies on geriatric population constituted 17% of all autopsies performed. Out of which, nearly half of them were due to natural causes and more than one third of total geriatric deaths were due to road traffic accidents.

The proportion of geriatric population will increase with time. The elderly population will survive longer yet suffer longer too, thus imposing

an even higher burden on the medical system. A systematic study into the death of this subset of population might give us an idea of where to concentrate our focus on to ensure these people will live longer and yet not suffer much.

Death is inevitable but we can find ways to prevent deaths like suicides or accidents or to delay them as in natural deaths. Proper care at home, frequent health checkups and free or cheaper medications, ensuring old people do not feela burden themselves, might help a lot.

Limitations:

The sample size in the current study is less. Moreover, the study was conducted in a single center. These factors might lead to the formation of some bias. Thus, a multicentric study for a longer period might be of greater help.

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