Original Article

Autopsy-Based Study of Suicidal Deaths Among the Elderly Conducted at Victoria Hospital Mortuary

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Abstract

Background: Suicide is the act of deliberately killing oneself and it is a significant cause of death in all age groups. When comparing the number of attempted and completed suicides, older people have a more significant number of successful suicide than any other age group worldwide. 'National Policy on Older Persons'- 1999 defines 'elderly' or 'senior citizen' as a person of age 60 years or above. NCRB 2020 reported that around 13,126 older people per 100,000 population committed suicide in India.

Objectives: This study aims to investigate the demographic characteristics, psychological, and etiological factors associated with elderly suicides, and evaluate the methods used by individuals in this age group to end their lives.

Methods: A cross-sectional study was conducted at Victoria Hospital Mortuary over 18 months (February 2021 to July 2022). Out of 397 autopsies in the study age group, 67 cases of suicide were included based on the inclusion criteria. Information was collected from police reports, family members, and suicide notes, followed by a detailed analysis of autopsy findings.

Results: The study revealed that 77.6% of the victims were male, with the majority falling within the 60-64 age group (40.3%). Hanging was the most common method of suicide (50.7%), followed by poisoning (34.3%). Key contributing factors included psychiatric disorders, predominantly depression (53.73%), chronic physical illness (46.27%), and social isolation or loneliness (32.84%).

Conclusion: Elderly suicide is a multifactorial issue, with psychological distress, chronic illness, and social isolation being the primary contributors. Effective prevention strategies should include early mental health interventions and social support systems tailored to the needs of the elderly.

Keywords: Elderly suicide, psychiatric disorder, social isolation, chronic illness, autopsy.

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Introduction

Suicide, the intentional act of taking one's own life, is a major cause of death across all age groups [1]. Globally, older adults have a higher rate of completed suicides compared to other age groups when considering the ratio of attempted to successful suicides[2].Suicide is a significant public health issue globally, with elderly individuals being one of the most vulnerable groups. The World Health Organization (WHO) estimates that every 40 seconds, someone dies by suicide, and the elderly population is particularly at risk due to various social, psychological, and physical stressors [5]. The term suicide, derived from Latin suicidium ("self-killing"), is defined as the deliberate act of ending one's life [6].

The National Policy on Older Persons, established in January 1999, defines the elderly as individuals aged 60 years or above [3]. According to the Population Census 2011, India has nearly 104 million elderly persons, with 53 million females and 51 million males [4]. In 2015, those above 60 accounted for 7.77% of the total suicide deaths in India [5]. A person reaches his or her old age after witnessing and withstanding all storms of life; thus, they can provide us with a 360-degree perspective on life. The traditional joint family system in Indian society has helped safeguard the social and economic security of older people. However, rapid changes leading to the emergence of nuclear families and the migration of younger generations abroad have exposed older individuals to emotional, physical, and financial insecurity [6, 7].

Despite the pressing nature of this issue, the problems faced by the elderly population in India have not received adequate attention. With the majority of the population aged less than 30, the issues confronting the elderly, or "grey population," have not been given serious consideration. It should not be forgotten that this demographic has contributed significantly to the growth of the country and individual families in their prime, and they can serve as mentors to today's younger generation for a better tomorrow. Factors such as co-morbid physical illness, mental health issues, lower socioeconomic status, unemployment, and loneliness have been identified as significant predictors of suicide attempts among the geriatric population [8,9]. While much attention has recently shifted towards adolescent suicides, the issue of suicide among the elderly remains critically underexplored. Given their higher rate of completed suicides, it is essential to focus on this vulnerable group. This research aims to fill the existing gap by identifying common risk factors and methods of suicide among the elderly, ultimately contributing to more effective prevention strategies. By highlighting the profound impact of elderly suicide, this study underscores the importance of addressing this often-overlooked demographic.

Methodology

1. **Study Design**

A cross-sectional study was conducted at Victoria Hospital Mortuary, Bengaluru, over 18 months (February 2021 to July 2022). The aim was to analyze the demographic, psychological, and etiological factors of suicide among elderly individuals aged 60 years and above.

2. **Study Population**

Out of 397 autopsies conducted on individuals aged 60 years and above, 67 suicide cases were selected based on the inclusion criteria.

Inclusion Criteria

- Elderly individuals (60+ years) with confirmed suicidal deaths.
- Availability of police reports, family interviews, or suicide notes.

Exclusion Criteria

- Inconclusive cause of death or insufficient information.

3. **Data Collection**

Data was gathered from:

- Autopsy reports: Determining the method of suicide and pre-existing conditions.
- Police reports & Family interviews: Information on circumstances and psychological history.
- Suicide notes: Insights into the mental state of the deceased.

4. **Data Analysis**

Data was summarized using descriptive statistics, focusing on demographic characteristics, psychological conditions, and suicide methods.

5. **Ethical Considerations**

Ethical approval was obtained (NO. BMCRI/PG/131/2020-21 dated 10-02-2021), and confidentiality was maintained throughout the study.

This streamlined approach provides a concise understanding of the methodology used in this study.

Results

A total of 397 autopsies were conducted on individuals aged 60 years and above during the study period, out of which 67 cases were identified as suicides.

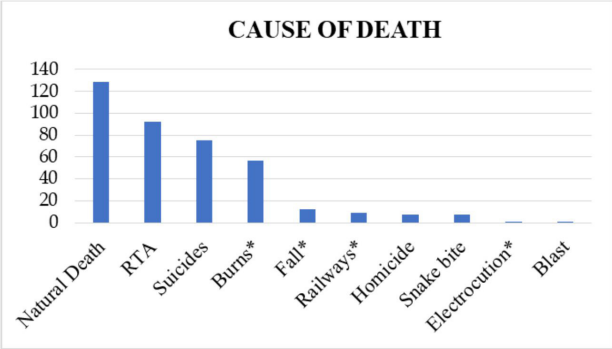

Fig. 1. Distribution of total number of unnatural deaths in the study age group between February 2021 to July 2022

Out of 390 cases in the study age group majority of the cases ie, 33.07% (129 cases) were natural death; 92% (92 cases) were road traffic accidents; 19.23% (75 cases) were suicides; 14.62% (57 cases) were accidental burns; 3.08% (12 cases) were accidental fall; 2.31% (9 cases) were accidental railway deaths; 1.79% (7 cases) were homicides; 1.79% (7 cases) were snake bite cases; 0.26% (1 case) was accidental electrocution and 0.26 % (1 case) was as a result of blast injury.

Table No: 1. Age wise distribution of suicides during study period.

Age	Frequency	%
60- 64 years	27	40.3
65- 69 years	16	23.9
70- 74 years	13	19.4
75- 80 years	5	7.46
More than 80 years.	6	8.96
Total	67	100

Table No: 1 shows age wise distribution of suicides among elderly. It has been observed that 40.3% (27 cases) of suicides occurred among the people aged 60-64 years, followed by 23.9% (16 cases), 19.4% (13 cases), 19.4% (13 cases), 7.46% (5 cases) and 8.96% (6 cases) among people aged 65-69 years, 70-74 years, 75- 80 years and >80 years respectively.

Fig. No: 2. Sex wise distribution of elderly suicides

Fig. No: 2 indicates that elderly males commit suicide (73%) more often than their counter parts (27%).

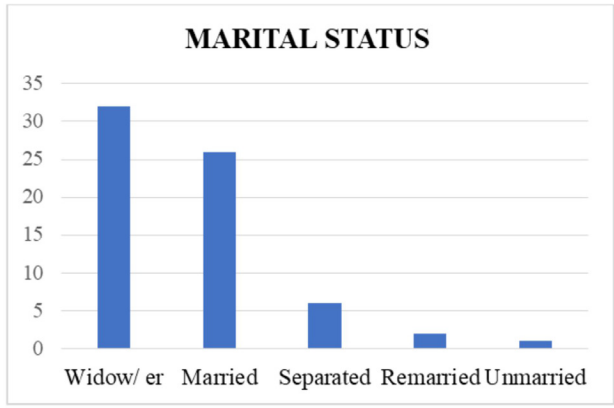

Fig. No: 3. Marital status of elderly suicide victims

In this study it has been found that married and widow/er were the majority group. 6 cases were separated from their spouse, 2 cases were remarried and 1 was unmarried.

Table No: 2. Socioeconomic status of elderly suicide victims

Socioeconomic class	**Frequency**	%
Upper	6	8.96
Upper middle	4	5.97
Lower middle	18	26.86
Upper lower	25	37.31
Lower	14	20.9
Total	67	100

Table No: 2 depict socioeconomic status of study group. Upper lower class includes 37.31% and lower middle class includes 26.86%, followed by lower class 20.9%, upper class 8.96% and upper middle class5.97%.

Table No: 3. Distribution of Suicidal methods

Method of suicide	Frequency	%
Hanging	34	50.7
Poisoning	23	34.3
Railway	4	5.97
Burns	2	2.99
Cut throat	2	2.99
Drowning	1	1.49
Fall	1	1.49
Total	67	100

Table 2 shows that the most common method of suicide was hanging, reported in 50.7% of cases (34 cases). This was followed by poisoning, which accounted for 34.3% (23 cases). Other methods included self-inflicted injuries and drowning, although these were less common.

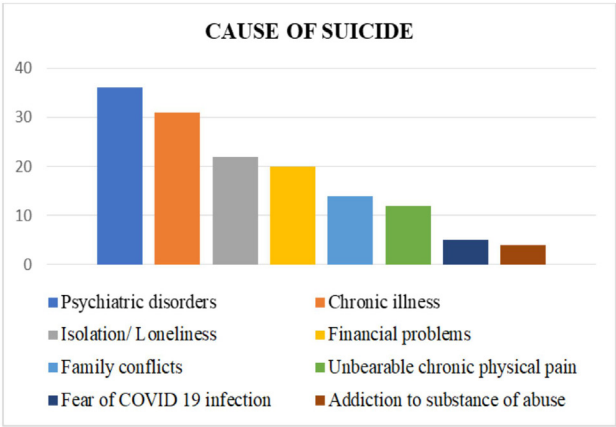

Fig. No: 4. Distribution of causative factors for suicide.

Fig. No: shows elderly suicide is having multifactorial causes. Majority of study population had psychiatric disorder in 53.73%-majority had depression secondary to their illness, chronic physical illness (46.27%), isolation/ loneliness (32.84%). Others factors include financial problem (29.85%), family conflicts (20.9%), chronic physical pain which is some time unbearable (17.91%), fear of COVID 19 infection and addiction to substance of abuse was found in 5.97% of study population.

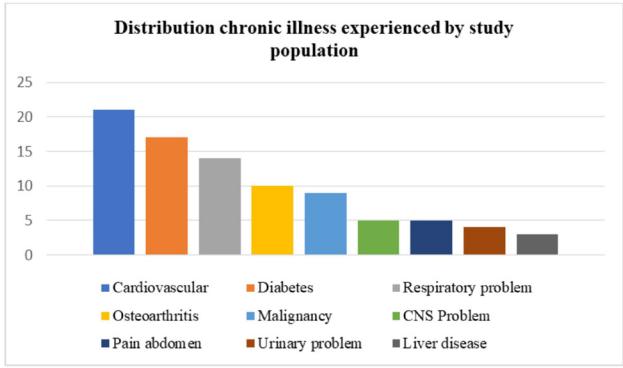

Fig. No: 5. Distribution chronic illness experienced by study population

Figure No: 5 highlights that among the study population 31.34% had cardiovascular disease, which included hypertension and IHD. Diabetes mellitus was present in 25.37%, respiratory problems in 20.89%, osteoarthritis 14.92%, malignancies (13.43%), neurological problems in 7.46% of chronic illnesses, pain abdomen 7.46%, urinary problems (5.97%) - only in males secondary to BPH, and liver disease constitute 4.48% of - cirrhosis and had liver abscess in oneeach.

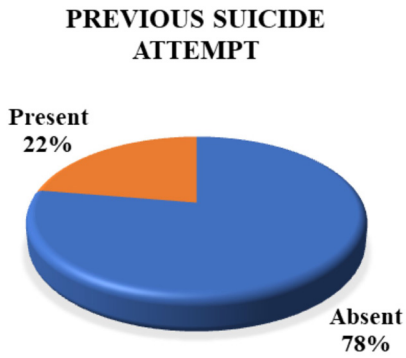

Fig. No: 6. Distribution of previous suicidal attempts in elderly suicide victims

Observations from Figure No: 6, indicates that previous suicidal attempt was present in 22.4% of the study population. It is absent in rest of the study population. This suggests that recurrent mental health issues and unresolved psychosocial problems were prevalent among those who completed suicide.

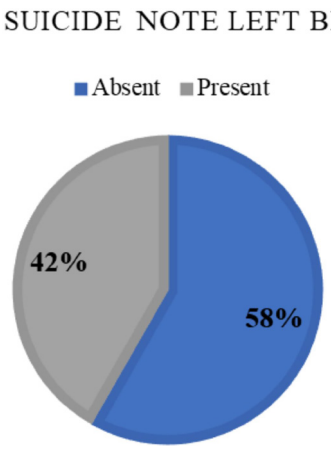

Fig. No: 7. Distribution of Suicide note written

Fig. No: 7 represents distribution of suicide notes written showing 28 cases (41.8%) had written suicide notes before death providing valuable insight into the psychological state of the victims. The notes often revealed feelings of hopelessness, despair, and a sense of being a burden on family members. Majority of the cases 39 cases (58.2%) did not write any suicide note.

Image No: 1. Image showing a case of death by partial hanging from a tree in the backyard with a kerchief used as padding to neck.

Image No: 2. Shows atypical hanging inside the bed room with obliquely upwards and backwards directed ligature mark.

Image No: 3. Suicidal hanging in a hospital due to COVID – 19 positive status.

Note the insitu intravenous canula

Image No: 4. A case of complex suicide. In-situ ligature material present around the neck with an intact knot over left side of the neck with hesitation cuts over the front of left forearm.

Image No: 5. Image a showing inflamed blackish discoloured friable stomach mucosa in a case of caustic poisoning.

Image b showing haemorrhagic stomach mucosa with prominent rughae in a case of aluminium phosphide poisoning.

Image No: 6. A case of death by railway suicide with open skull injury.

Image No: 7. A case of death by self-immolation.

Also note the presence of soot particles in the larynx and trachea.

Image No: 8. A case of death by hanging with intact ligature material.

The deceased also had an infected callous ulcer of the right foot.

Image No: 9. Shows features of chronic liver disease in a case. The diseased was an alcoholic who lived separately and didn't had enough money to undergo treatment.

a) Icterus in the sclera.
b) Cirrhotic liver.
c) Pus in the peritoneal cavity possibly due to bacterial peritonitis.

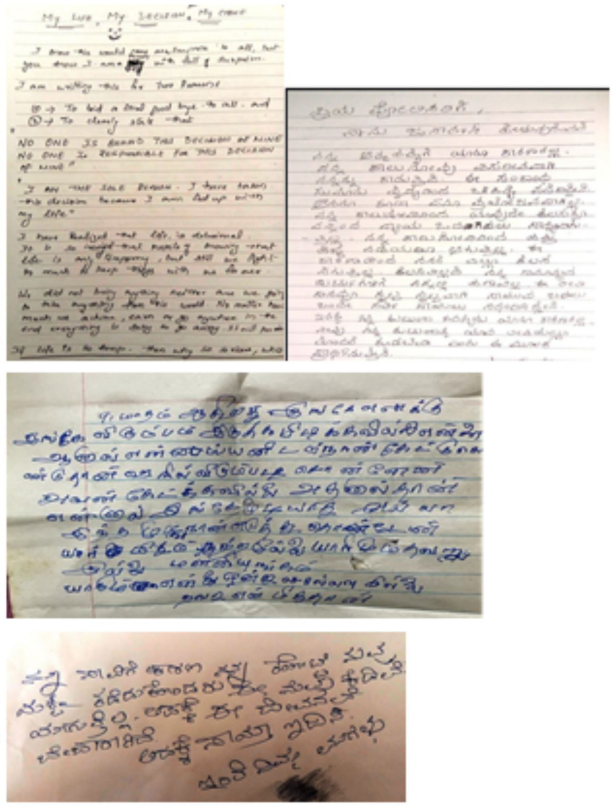

Image No: 10. Suicide notes. The collage above presents suicide notes collected in Kannada, Tamil, and English. The notes reflect the deceased individuals' struggles with chronic pain, inability to lead normal lives, financial hardships, psychological issues such as loneliness, and, in one case, the distress of being unable to return home to Tamil Nadu due to the COVID-19 lockdown, which left the individual stranded in Karnataka. These personal accounts provide valuable insight into the circumstances leading to their tragic decisions.

Discussion

This autopsy-based study on elderly suicides provides insights into demographic, etiological factors, and methods of suicide. During the 18-month study, out of 3962 autopsies, 10.02% (398 cases) were individuals over 60 years old, with 19.23% (75 cases) attributed to suicides. However, 67 cases were analyzed after excluding cases that didn't meet the inclusion criteria. Natural deaths (33.07%) and road traffic accidents (23.58%) were the most common causes of death, with suicides ranking third. This is in line with studies like that of Ozge Timur et al., which found suicides to account for 9.3% of unnatural deaths

in Turkey[10], and Dr. Aadamali Nadaf, who reported suicide as the third leading cause of unnatural deaths in India[11].

The highest suicide rates were observed in the 60-64 age group (40.3%), followed by 65-69 years (23.9%) and 70-74 years (19.4%). The mean age was 73 years, consistent with findings by Salib et al. [12] and Dr. Nadaf[11]. Similarly, a study by Avanish Bhai Patel also found the 60-69 age group most prone to suicide[13].

The current study revealed that men (77.6%) were more likely to commit. The suicide rate is higher among men (22.4%) than women (22.4%), with a ratio of 2.7:1. Avanish Bhai Patel (61.66%)[13], Dr. Aadamali Nadaf (73%)[11], Abraham V. J. (60.31%)[14], and K. Thulasiram et al. (68.3%)[15] have reported similarly high rates of suicide among males.

Marital status played a role, with nearly half of the cases being widowed. Studies by Nadaf[11] and others echoed similar findings, showing widows and widowers as a significant demographic in elderly suicides. The high suicide risk among widows and widowers in the current study may result from spouse loss, loneliness, and a demanding lifestyle. The socioeconomic analysis using the Modified Kuppuswamy Scale[16] revealed that most suicides occurred in the upper-lower and lower-middle classes, highlighting the link between economic strain and suicide. Dr. Nadaf's study reported similar findings, indicating that the increased suicide incidence among lower-class individuals may be attributed to a higher prevalence of health and financial issues[11].

Hanging (50.7%) emerged as the most common method of suicide, followed by poisoning (34.3%). Other methods included throwing oneself under a vehicle, cut-throat, and drowning. Similarly hanging was the common method adopted for committing suicide in the studies done by Braham et al. (62.5%) [17] and Ozge Timur et al. (60%)[10].While some studies from other regions cite poisoning as more common, the preference for hanging could be due to its perceived quickness and certainty. Contrary to the current study, Salib et al. [12] and Dr.Aadamali Nadaf [11] reported that self-poisoning is the most common method used for suicide, followed by hanging. NCRB (2009) reported in their research that the most popular methods of suicide in India were poison eating (33.6%), hanging (31.5%), self-immolation (9.2%), and drowning (6.1%) [18].

The current study demonstrates that elderly suicide is multifactorial, with psychiatric disorders (53.73%), chronic physical illness (46.27%), and isolation/loneliness (32.84%) being the primary contributors. Other factors include financial difficulties (29.85%), family conflicts (20.9%), chronic physical pain (17.91%), and a smaller proportion affected by fear of COVID-19 and substance abuse (5.97%). Salib et al. [12] found psychiatric conditions in nearly half (49.5%) of elderly suicides, consistent with findings by Harwood et al. (2001) [19] and Barraclough (1971)[20], which indicated depression in 77% and 90% of cases, respectively. These studies suggest that depression in older adults often manifests as physical complaints, such as exhaustion and memory loss, making it harder to detect.

Physical illness is another significant factor, with 63.5% of elderly suicides having a co-existing medical condition. Conditions like cardiovascular disease (31.34%) and diabetes mellitus (25.37%) are particularly prevalent, alongside respiratory issues and cancer. Cattell and Jolley (1995) also emphasize that physical illnesses often increase suicide risk through associated mood disorders. The COVID-19 pandemic further exacerbated elderly mental health, with over 300 suicides during the lockdown linked to fear of infection and loneliness[21].

Cardiovascular issues were the most prevalent chronic ailment in the study population (31.34%), followed by diabetes mellitus (25.37%), respiratory problems (20.89%), osteoarthritis (14.92%), cancer (13.43%), abdominal pain (7.46%), urinary issues (5.97%), and liver problems (4.48%). Similar findings were reported by Dr.Aadamali Nadaf[11]and H. R. Cattell[22]. Haakon H. Eilertsen[23] also found a high prevalence of cancer among older individuals who committed suicide. This suggests that cardiovascular disease and diabetes contribute significantly to rising suicide rates among the elderly, especially in lower and middle-class groups.

In this study, 22.4% of the elderly suicide victims had previously attempted suicide, which contrasts with Dr.Aadamali Nadaf's [11] findings of 11%.

Research suggests that older adults with strong suicidal intent are more likely to succeed in their attempts. Additionally, 53.7% of the study population had poor health before death, supporting Howard Cattell's [22] findings that deteriorating health often precipitates suicidal behaviour. In contrast, other studies reported that most victims were in good health prior to their suicides.

In this study, 41.8% of the elderly suicide cases left suicide notes, while 58.2% did not. This aligns with findings by Salib et al. (38%) and Cattell and Jolley (43%). Note-leaving is not random and may depend on factors like education, physical ability, and access to writing materials. Many older adults may live alone or lack someone to write to, which can explain the low occurrence of suicide notes[12, 21].

Conclusion

Elderly suicides are driven by a mix of social, psychological, economic, and health-related factors. This study emphasizes the urgent need for comprehensive prevention strategies that address mental health, enhance social support, and ensure economic security for the elderly. The elderly possess a wealth of life experience, offering valuable perspectives that can benefit younger generations. However, the shift from traditional joint families to nuclear families, coupled with the migration of younger generations, has left many elderly individuals vulnerable to emotional, physical, and financial insecurities.

Although their contributions to society have been significant, the issues facing the elderly have not received adequate attention, especially in a country where the focus is often on the younger population. It is crucial to recognize the value the elderly bring to society and the potential they have to mentor and guide the next generation.

To reduce the incidence of suicide among the elderly, early detection and treatment of depression, strengthening social networks, and ensuring access to healthcare are essential. Additionally, culturally sensitive prevention strategies, such as restricting access to common means of suicide and providing targeted mental health support, are necessary. By addressing these unique challenges, society can ensure that the elderly continue to contribute meaningfully, while also reducing the risk of suicide in this vulnerable group.

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Conflict of Interest: No

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