MEDICOLEGAL ASPECTS OF SUICIDES, A RETROSPECTIVE STUDY OF 542 CASES BROUGHT FOR AUTOPSY TO THE DEPARTMENT OF FORENSIC MEDICINE, GOVERNMENT MEDICAL COLLEGE, KOTTAYAM IN THE YEAR 2015

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ABSTRACT

BACKGROUND

Fatal Deliberate Self-Harm (DSH) or suicide is a self-chosen method to end one's own life. It may be due to a momentary behavioural aberration or the person may be harbouring the suicidal tendency for a prolonged period, which might have culminated in this catastrophic deliberate self-harm. Suicide is best viewed as a symptom rather than a disease. The underlying disease is usually a depression of one type or the other and as such is highly treatable by pharmacological and psychological means.¹

MATERIALS AND METHODS

Present study is a retrospective study conducted in the Dept. of Forensic Medicine, Govt. Medical College, Kottayam. All cases of death due to alleged suicide brought for autopsy in the department during the calendar year 2015 were analysed. During the above period, 542 cases of death due to suicide were brought for autopsy. The objectives of the study were to analyse the medico-legal aspects of all completed cases of suicides. The main aim was to analyse the age and sex incidence; marital status; educational, residential and occupational status; presence of major psychiatric illness; indulgence in alcohol or drug abuse; parental taunting; presence of any major personal illness; method of suicide adopted; the gender differences in method selected for suicide and in poisoning cases; the type of poisons selected for suicide. Sample size: There were 542 cases of alleged suicide in 2015, brought for autopsy.

Source Population- All cases of suicide brought for autopsy in the Department of Forensic Medicine.

Inclusion Criteria- All known cases of death due to suicide were included.

Exclusion Criteria- All unknown bodies were excluded among the suicide cases.

Data Collection- Baseline data like age, sex, religion, history of any disease were collected from the requisition provided by the investigating Police Officer. Other parameters like method adopted for suicide was analysed. In case of poisoning, the type of poison was entered based on the chemical examiner's report from The Chief Chemical Examiner to Government, Kerala, Trivandrum.

Analysis- Data collected was entered in MS-Excel and analysed using SPSS version 15.

RESULTS

Among the 542 cases of suicide, the maximum number of cases were found in the 41 – 50 age group. Out of the 542 cases, there were 390 males and 152 females. Religion-wise Hindus were predominant. Among the method of suicide adopted, hanging was the main method followed by poisoning both in males and females. Among the poisoning cases, most preferred poison was organophosphorous compounds.

CONCLUSION

On analysis of 542 cases of suicide brought for autopsy in the year 2015, the following conclusions were made.

1. The most vulnerable age for committing suicide was in the 41 – 50 age groups.
2. On considering the age group of 31 – 50 as middle aged population, we get the number of cases as 318 out of 542, i.e. 59% of cases belong to this age group. This age group can be regarded as the working class and they are exposed to high risk of suicidal tendency.
3. The next most vulnerable age group was adolescents and young adults in the age group of 11 – 30 years, 132 cases (24%).
4. In age group of 61 – 90, there were 92 cases (17%).
5. The most widely employed method for suicide was found to be hanging- 63%, followed by poisoning- 25%. In India hanging appears to be the most preferred method, as it is an easy and sure method and could be done in privacy without anybody noticing it.
6. Among the various types of poisons used for committing suicide, the most preferred one was organophosphorous compounds followed by formic acid.

KEYWORDS

Suicide, Deliberate Self Harm (DSH), Autopsy.

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BACKGROUND

Fatal Deliberate Self-Harm (DSH) or suicide is a self-chosen method to end one's own life. It may be due to a momentary behavioural aberration or the person may be harbouring the suicidal tendency for a prolonged period, which might have culminated in this catastrophic deliberate self-harm. About 800,000 people, commit suicide worldwide every year.²

Among these, 135,000 (17%) are residents of India.³ Between 1987 and 2007, the suicide rate increased from 7.9 to 10.3 per 100,000 population in India⁴ with higher rates in southern and eastern states of India.⁵ Tamil Nadu and Kerala have the highest suicide rates, 12.5 per 100,000 population in 2012. The male-to-female ratio was 2: 1.2. According to WHO, age standardised suicide rate in India is 16.4 per 100,000 for women (6th highest in the world) and 25.8 for men (ranking 22nd).⁶ Suicide is best viewed as a symptom rather than a disease. The underlying disease is usually a depression of one type or the other and as such is highly treatable by pharmacological and psychological means.¹

Aims and Objectives

1. To find out the age wise distribution of suicide.
2. To find out the various methods employed to commit suicide.

MATERIALS AND METHODS

This is a retrospective study, in which all the cases of suicide brought for autopsy during the calendar year 2015 in the Department of Forensic Medicine, Government Medical College, Kottayam was analysed.

Sample Size

There were 542 cases of alleged suicide in 2015, brought for autopsy.

Source Population

All cases of suicide brought for autopsy in the Department of Forensic Medicine.

Inclusion Criteria

All known cases of death due to suicide were included.

Exclusion Criteria

All unknown bodies were excluded among the suicide cases. Data Collection: Baseline data like age, sex, religion, history of any disease were collected from the requisition provided by the investigating Police Officer. Other parameters like method adopted for suicide was analysed. In case of poisoning, the type of poison was entered based on the chemical examiner's report from The Chief Chemical Examiner to Government, Kerala, Trivandrum.

Analysis

Data collected was entered in MS-Excel and analysed using SPSS version 15.

RESULTS

During the period 01.01.2015 to 31.12.2015, 542 cases of death due to alleged suicide were brought for autopsy at the Dept. of Forensic Medicine, Govt. Medical College, Kottayam.

Age and Sex Incidence

The maximum number of cases of suicide were in the age group of 41 - 50, 124 cases (23%) followed by age group 51 - 60; 108 cases (20%) and 31 - 40 age group, 87 cases (16%). The minimum number of cases of suicide were in the age group of above 70, 37 cases (7%) followed by age group 61 - 70, 56 cases (10%) and age group 11 - 20, 56 cases (10%).

Age Group	Number of Cases	Percentage
11 - 20	56	10
21 - 30	75	14
31 - 40	87	16
41 - 50	124	23
51 - 60	108	20
61 - 70	56	10
Above	36	7

Table 1. Age Distribution of Suicide Cases (N = 542)

Sex Incidence

Out of 542 cases, 390 were males (72%) and 152 females (28%).

Religion Wise Distribution of Suicide Cases

Out of 542 cases, 344 were Hindus (63%), 178 were Christians (33%) and 20 were Muslims (4%).

Fig 3 Religion wise distribution of suicide cases N = 542 **Marital Status**

Out of 542 cases, 394 were married (73%) and 148 (27%) were unmarried.

Educational Status

Among the 542 cases, 315 were having primary school education (58%) and 227 were having above high school level education (42%).

Residential Status

Among the 542 cases, rural population was 317 (58.5%) and the urban population 225 (41.5%).

Occupational Status

Among 542 cases, manual labourers were 250 (46%), unemployed 145 (27%), students 72 (13%), salaried persons 46 cases (8.5%) and business class 29 (5.4%).

Incidence of Psychiatric Illness

Among the 542 cases 72 cases (13%) were known to be suffering from psychiatric illness, on treatment.

Alcohol Consumption among the Male Population

Among the male population of 390 cases, 141 (36%) cases were known alcoholics indulging in excessive alcohol consumption.

Love Failure

Among the 542 cases, 23 cases (4%) were reported cases of love failure.

Domestic Conflicts

Among 542 cases, 74 cases (14%) were reported to have history of domestic conflicts.

Major Personal Illness

Those suffering from major personal illness like those affecting the cardiovascular system, COPD and malignancy were 91 cases (17%).

Taunting

There were 12 cases (2%) reported to be involved in taunting by parents.

Method of Suicide Adopted

Among the 542 cases the maximum number of suicides, 340 cases (63%) were due to hanging followed by poisoning 136 cases (25%), burns 41 cases (8%) and drowning 13 cases (2.5%).

Method	No. of Cases	Percent
Hanging	340	63
Poisoning	136	25
Burns	41	7.5
Drowning	13	2.5
Railway	6	1
Cut wrist	3	0.6
Cut throat	1	0.2
Blast	1	0.2
Fire arm	1	0.2

Table 2. Method Adopted for Suicide (N = 542)**Fig 5 Method adopted for suicide N = 542**

Among the 390 male suicide cases 255 cases (65%) died of hanging, poisoning 101 cases (26%), burns 16 cases (4%) and drowning 6 cases (1.5%). Among the 152 female suicide cases, in 85 cases (56%) death was due to hanging, poisoning 35 cases (23%), burns 25 cases (16%) and drowning 7 cases (5%).

Method	Male	Percentage	Female	Percentage
		N = 390		N = 152
Hanging	255	65	85	56
Poisoning	101	26	35	23
Burns	16	4	25	16
Drowning	6	1.5	7	5
Railway	6	1.5	0	0
Cut wrist	3	0.8	0	0
Cut throat	1	0.3	0	0
Blast	1	0.3	0	0
Fire arm	1	0.3	0	0

Table 3. Method adopted for Suicide Gender Wise Distribution (N = 542)**Fig 6 Method adopted for suicide in percentage – Gender wise distribution N = 542**

Among the 136 poisoning cases, the most preferred poison for suicide was organophosphorous compounds, 68 cases (50%) followed by formic acid 24 cases (17%), carbamate poisoning 19 cases (14%) and there were 11 cases (8%) of odollam poisoning.

Type of Poisoning	No. of Cases	Percentage
		N = 136
Organophosphorous	68	50
Formic acid	24	17
Carbamate	19	14
Odollam	11	8
Drug overdose	6	4
Rodenticide	4	3
Copper sulphate	2	1.5
Ethyl alcohol	2	1.5
Organo chloro	2	1.5
Others	2	1.5

Table 4. Type of Poisoning in Suicide (N = 136)

DISCUSSION

Out of the 542 cases of suicide in the year 2015, 390 (72%) cases were males and 152 (28%) cases were females. Females are quite content to lead a life of their own and are subsumed within family.⁷ Even though suicidal ideas and tendencies are more prevalent among females, mortality from suicides are typically lower in females than for males, a phenomenon described as 'Gender Paradox' in suicides.⁸ Also females are more resistant to psychological stress and they are adapted to withstand day-to-day stresses more than their male counterparts. There is an over representation of females in non-fatal suicidal behaviour and a preponderance of males in completed suicide.⁹

The maximum incidence of suicide (124 cases) 23% was in the age group of 41 - 50 years followed by (108 cases), 20% in the 51 - 60 years' age group. Youth and middle aged people were the prime groups taking recourse to path of suicides in India. These age groups account for 34% and 32% of suicides respectively.¹⁰ Suicide rates are lowest in persons under 15 years of age and highest in those aged 70 years or older for both men and women.¹¹

Hindus are the majority of victims of suicide. Out of 542 cases 344 were Hindus (63%), 178 were Christians (33%) and 20 were Muslims (4%). Affiliation with Islam is associated with low suicide acceptability.¹² There is a

significant protective relationship between religiosity and suicide.¹³

Out of 542 cases, 394 (73%) were married and 148 (27%) were unmarried. Marriage acts as a protective factor against suicide. Reported rates of suicide among various categories revealed that suicide rate is less in married people.¹⁴

Among the 542 cases, 315 (58%) were having either primary education or less and 227 (42%) cases were having high school education or above. Persons with higher educational attainment had significantly increased odds ratio of dying from suicide rather than a natural cause in the age group of 15 - 54 years.¹⁵

Among 542 cases, manual labourers were 250 (46%), unemployed 145 (27%), students 72 (13%), salaried persons 46 cases (8.5%) and business class 29 (5.4%). The maximum suicides were among manual labourers which include agricultural and other daily wage employees followed by unemployed.

Among the 542 cases 72 cases (13%) were known to be suffering from psychiatric illness, on treatment. The mentally ill persons are more prone to depression and they are susceptible to committing suicides. Mood disorders of which depression is the major example are the most common psychiatric condition associated with suicide.¹⁶

For those with bipolar depression, suicide risks are approximately 15 times that of the general population.¹⁷ Suicide often first occurs when work, study, family or emotional pressures are at their greatest.

Among the male population of 390 cases, 141 (36%) cases were known alcoholics indulging in excessive alcohol consumption. Among the 542 cases, 23 cases (4%) were reported cases of love failure. Those suffering from major personal illness like those affecting the cardiovascular system, COPD and malignancy were 91 cases (17%). There were 12 cases (2%) reported to be involved in taunting by parents.

Among the 542 cases, the maximum number of suicide 340 cases (63%) were due to hanging followed by poisoning 136 cases (25%). Hanging was the predominant method of suicide in most countries. The highest proportions were around 90% in men and 80% in women.¹⁸

According to WHO, 800,000 people die by suicide every year globally and about 30 percent of them kill themselves by consuming pesticides, most of them in low and middle income countries. Since most suicides happen impulsively, easy access such as pesticides can hugely affect a person's decision. Pesticide poisoning is most common in rural regions, as the chemicals are easily available in those areas. Self-poisoning with pesticides accounts for about a third of all suicides worldwide.

CONCLUSION

On analysis of 542 cases suicides brought for autopsy in the year 2015, the following conclusions were made.

1. The most vulnerable age for committing suicide was in the 41 - 50 age group.
2. On considering the age group of 31 - 50 as middle aged population, we get the number of cases as 318 out of 542, i.e. 59% of cases belong to this age group. This age group can be regarded as the working class and they are exposed to high risk of suicidal tendency. The reason could be financial, job related problems or

unemployment. As this age group is identified as most vulnerable group for suicide, efforts should be directed at identifying the vulnerable section among this age group and counselling should be given to such people who have been identified of suffering from severe stress. Steps to improve the working atmosphere and working condition should be taken by the concerned authorities.

3. The next most vulnerable age group was adolescents and young adults in the age group of 11 - 30 years, 132 cases (24%). The wide use of internet and misuse of social media could have led to a feeling of unrest and despair among adolescents and young adults. The stress of examinations and lack of employment opportunities could also add up to the stress. Creating awareness among the parents regarding the overindulgence of adolescents and young adults in the social media and misuse of internet should be undertaken by the authorities of schools and colleges. Similarly, proper counselling should be done in the schools and colleges and the vulnerable group should be identified and proper attention should be taken to prevent suicide among this young generation.
4. In age group of 61 - 90, there were 92 cases (17%). Now-a-days majority of families are nuclear family consisting of parents and one or two children. The elderly people are usually left alone in their ancestral homes as the new generation are employed in the towns or other districts, states or even abroad. The loneliness, depression and helplessness affecting the senior citizen could lead to the increasing incidence of suicides among the elderly. Proper counselling, timely healthcare delivery and properly managed 'elderly homes' for the care and rehabilitation of senior citizens should be undertaken at the Govt. level or by voluntary organisation. Educating the public regarding the care and treatment of elderly parents could be done by the administration.
5. The most widely employed method for suicide was found to be hanging (63%) followed by poisoning (25%). In India, hanging appears to be the most preferred method as it is an easy and sure method and could be done in privacy without anybody noticing it. All that is needed is a piece of rope, shawl, dhoti or saree, which are easily available in any household. Unlike poisoning which leads to comparatively prolonged fatal period and severe discomfort and pain, and the chances of getting hospitalised are more, in hanging chances of survival is very low or nil. The period of discomfort and pain is also very momentary. That may be the reason most people choose hanging as the most preferred method for committing suicide.
6. Among the various types of poisons used for committing suicide, the most preferred one was organophosphorous compounds followed by formic acid. Kerala is primarily an agriculture oriented society and in most of the households insecticides are freely available. That may be the reason organophosphates are preferred as the ideal one for suicide. In central Kerala, natural rubber is widely grown as a cash crop and formic acid is used in rubber industry. This could be the reason for the use of formic acid for suicidal purpose.

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