RESEARCH

A study of suicidal cases in medicolegal autopsy

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Abstract

Background: Despite the development of suicide prevention programmes, greater recognition of depression, and advances in biological treatments for depression, the overall rate of suicide has not changed over the past several decades. The need for a comprehensive study or socioeconomic, aetiopathogenic, medicolegal, and psychological phenomenon thus can hardly be overemphasised today in any group or section of human population anywhere in the world.

Material and methods: Material for the present study consisted of 100 fatal cases of suicide during the period of 1 August 2004 to 31 July 2005. The various epidemiological data i.e. age, sex, religion, occupation etc. as well as pertaining to the motives and methods used in suicide were gathered.

Results: Out of 100 randomly selected cases of suicide, 45 were male and 55 were female. The adolescent female and young male adults were more prone to suicide. Housewife represented highest number. In maximum number of suicide victims, educational level was primary. Most of the cases were of rural origin. The maximum number was from lower income group. A higher incidence of suicide was found in the married group. Joint family represented the highest number. The large majority of cases committed suicide during midnight and early in the morning. In an overwhelming majority of cases, relatives of victims reported motive as unknown. In the current study, 62% committed suicide by hanging. A total of ten per cent of the cases gave a history of substance abuse, mostly of alcohol. Major mental disorder comprised of three per cent in males and five cent in females. A fairly good number of cases (seven per cent) had chronic physical illnesses. There was presence of an element of abetment with as many as nine cases.

Conclusion: Knowledge of the epidemiology and demographics of suicide is essential to assessing the suicidal individual and their prevention.

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Introduction

Suicide has always been a topic of interest among researchers as there are various factors responsible to be associated with suicide. Social disorganisation, poor family support system, economic imbalance, war, population explosion, scientific and technical advancement are thought to play a major role in this phenomenon. Nearly half a billion persons are reported to be taking their own lives in spite of the taboos and shame attached to the act of suicide. It is also believed that at least there are eight to ten unsuccessful or attempted suicides against each successful one.

Self-destructive behaviour and nonfatal suicide attempts, although difficult to categorise, have been conceptualised as parasuicide. The distinction between parasuicide and completed suicide is important. Parasuicide patients usually recognise that the means are nonlethal, and these patients have different characteristics than patients who display lethal suicidal behaviour.

Despite the development of suicide prevention programmes, greater recognition of depression, and advances in biological treatments for depression, the overall rate of suicide has not changed over the past several decades. It remained in the range of 11-12 per 1,00,000 annually in the United States.[1] Figures published by the Bureau of Police and Research Development (BPRD)[2] in India for the years 1971-78 reveal a suicide rate of 6.3-7.9 per 1,00,000 population with an increasing trend in recent past.

The need for a comprehensive study or socioeconomic, aetiopathogenic, medicolegal, and psychological phenomenon thus can hardly be overemphasised today in any group or section of human population anywhere in the world. Psychological autopsy is a retrospective process in which data is collected to help reconstitute the psychosocial

environment of suicide committers and better understand the circumstances of their death.[3] The method is applied to suicide prevention, crisis intervention, and research to identify persons at risk.[3] This study, based on the medicolegal autopsies carried out on the victims of fatal suicide cases, is hopeful of giving deeper insight into different aspects of this burning issue.

Historical aspect

Vast majority of communities across condemned suicide as an act of cowardice, while others glorified it, yet another group was ambivalent towards it. However, suicide or self-destruction for a noble cause such as for one's own motherland or nation, religious, or political faith has been glorified universally. To our current way of thinking, the locus of conceptualisation—the way in which the topic of suicide is officially seen by the state (the courts, the church, the press, the mores, society, the leading-edge intellectuals)—can be represented by a set of words ranging from sin to selfhood. Each of these views has had its brief decades or even centuries in the sun.

The history of suicide goes back to the ancient times with earliest written records from Greece (Socrates, Seneca) to modern day (van Gogh, Hitler, Hemmingway).[3] In ancient Greece, from the earliest days of the Stoic School the problem of suicide is a problem of the free will.[4]

In India, attitude towards suicide has always been ambivalent. Suicide in Ganga at Varanasi and at the confluence of Allahabad was considered permissible and desirable. In the epics of Ramayana (1600 BC) and Mahabharata (1400 BC), suicide was not considered as taboo. The great Hindu king of Ayodhya, Lord Rama committed suicide, depicts the epic of Ramayana, along with his family including his brothers and disciples who ended their lives by plunging into the river Saryu. According to legend, Sita, wife of Rama, drowned voluntary 'jal samadhi' in the same river. In Mahabharata, Bidur, the step brother of Pandavas and Kauravas, left his mortal frame by starvation. Pandavas along with their wife Draupadi banished themselves into the great Himalayas in their bid to leave their mortal frames. Bhisma, the great grandfather of Kauravas and Pandavas, had the benediction that empowered him to will his death.

The Upanishads (16 BC-15 AD) and the laws of Manu (1 AD) praised one a man who has acquired insight to choose voluntary death by starvation or drowning. However, in the era of Dharma Shastra, suicide or an attempted suicide came to be condemned as 'mahapataka' or a great sin except under certain circumstances. Decrying suicide, Bhagwat Purana (2 BC) says that "it is difficult to be born as a human being, if one has not taken advantage of this birth and not tried to attain salvation with the help of a real master, he is guilty of committing suicide." Puran (1-3 AD) gives the story of a saint whose austerity was being tested by God Indra, who appeared in the form of a bird and demanded the saint to allow his body to be used for his food. The former readily agreed and fulfilled his demand by committing suicide.

The Jains thought that people who kill themselves by violent methods are reborn as demons, but they praised waiting patiently to be starved to death in certain situations. After adopting Jainism, king Chandra Gupta Maurya (298 BC) ended his life by starvation in the Jain shrine in Mysore district of Karnataka. The history of Rajasthan is full of heroic self-sacrifices among the Rajputs. From 18th century onwards, East India Company gave detailed account of the custom of 'sati' as practiced in some parts of our country. Raja Ram Mohan Roy (1833) had to stir up public opinion for uprooting this evil from the Bengali Hindu society till Sir William Bentinct, the then Viceroy of India, banned this inhuman evil custom. Among the Muslim rulers of India, Babar (1483-1530) was said to have prayed to Allah for the early recovery of his ailing son Humayun by inviting his son's sickness on himself and it is believed that Babar fell sick and died as Humayun recovered. Manu, the Indian lawmaker, prescribed suicide ('atma-hatya') as a method of amelioration of the guilt attached to certain crimes or breaches of social norms such as killing of a 'brahmin'. Since ancient times, Japanese practiced 'harakiri' system of suicide.

The study of history gives mankind a special sense of control. It organises and puts a template on the past. This enables us to enjoy the paradox of understanding something better while at the same time not being able to do anything about it.

Material and method

Material for the present study consisted of 100 fatal cases of suicide brought to the Department of Forensic Medicine, Gauhati Medical College Hospital (GMCH), Guwahati, Assam, India during the period of 1 August 2004 to 31 July 2005.

The various epidemiological data i.e. age, sex, religion, occupation etc. as well as pertaining to the motives and methods used in suicide were gathered from the police papers including the inquest report and interrogation of accompanying police official, relatives, neighbours, and friends. Few cases left suicide notes and they were included in the current study.

All hundred cases were collected randomly using a standard proforma. These were then studied and analysed and have been presented under the observations. The socioeconomic status of every case has been categorised arbitrarily as follows considering the socioeconomic

condition of the society: (i) lower class, where per capita income is less than Rs 30,000 per annum; (ii) middle class, where per capita income is Rs 30,000 to 60,000 per annum; and (iii) upper class, where per capita income is more than Rs 60,000 per annum.

Observations and results

A total number of 1565 medicolegal autopsies were performed in the Department of Forensic Medicine, GMCH during the period of 1 August 2004 to 31 July 2005. Out of these, the total number of suicide cases was 285, constituting 18.2%. Table shows the suicide cases autopsied from 1 August 2004 to 31 July 2005 month wise.

Table. Suicide cases autopsied month wise

Months, year	No. of cases
August, 2004	6
September, 2004	9
October, 2004	7
November, 2004	4
December, 2004	4
January, 2005	6
February, 2005	6
March, 2005	9
April, 2005	10
May, 2005	14
June, 2005	15
July, 2005	10

Out of 100 randomly selected cases of suicide, 45 were male and 55 were female. This is against the prevailing trend both in and outside the country that suicide is predominantly a masculine trait. Age group wise, the adolescent female (30%) were more prone to suicide and in male group, young adults (20%) were more prone to suicide. In middle age groups, both male and female comprised of five per cent each, followed by old age group, one per cent each. In school going age group, suicide rate was one per cent in both male and female. Below ten years, no case was reported.

Hindus outnumbered other religion (95%); Muslim comprised three per cent and Christian one per cent. Housewife represented highest number (28%), followed by student (17%), service holder (15%) and cultivator (13%). Domestic worker showed a higher number in female (nine) than in male (two). In business and labour, male predominated (6:3 and 6:1). In maximum number of suicide victims, educational level was primary, comprising 18 females and seven males. This was followed by illiterates with 23%, out of which 13 were males and ten females. The least vulnerable group was with postgraduate qualification (three per cent), out of which two were females and one male.

Most of the cases were of rural origin, of which 35 were females and 27 were male. In the present series of 100 randomly selected cases of suicide, the maximum number was from lower income group, with 23 females and 19 males. This was followed by middle class (31) and upper class (26). A higher incidence of suicide was found in the married group with 27 females and 25 males. This was followed by unmarried group with 23 females and 20 males. The separated and divorced groups represented two per cent each (all females). Joint family represented the highest number with 46 females and 31 males.

The large majority of cases committed suicide during midnight and early in the morning with 24 females and 23 males (figure). Twenty five per cent of the cases committed suicide during evening till midnight, 15% committed suicide between early morning till noon and 13% of cases chose the afternoon hours (figure). In an overwhelming majority of cases (48 females and 38 males), relatives of victims reported motive as unknown. This was followed by family quarrel (five), ill treatment by husband/in-laws (four) and failure in love (four). One school going victim committed suicide following scolding by parents.

In the current study, 62% committed suicide by hanging. This was followed by poisoning (25%). Drowning and jumping over running train comprised five per cent each. Burning method was used by three per cent of the cases. A total of ten per cent of the cases gave a history of substance abuse, mostly of alcohol. Major mental disorder comprised of three per cent in males and five cent in females. A fairly good number of cases (seven per cent) had chronic physical illnesses. There was presence of an element of abetment with as many as nine (eight female and one male) cases. Social status of abettors were mother-in-laws (four), husband (three) and superior staff (two). All the victims of abetment by mother-in-laws and husbands were their daughter-in-laws and wives.

Discussion

Suicide is amongst the leading causes of death in the developed nations (eighth leading cause of death in the United States).[5] In the developing nations also, the trend is rising fast. The overall rate of suicide has not changed over the past several decades. It has remained in the range of 11-12 per 1,00,000 annually.

Incidence

Out of the 1565 total medicolegal autopsies conducted during the period of 1 August 2004 to 31 July 2005 in the

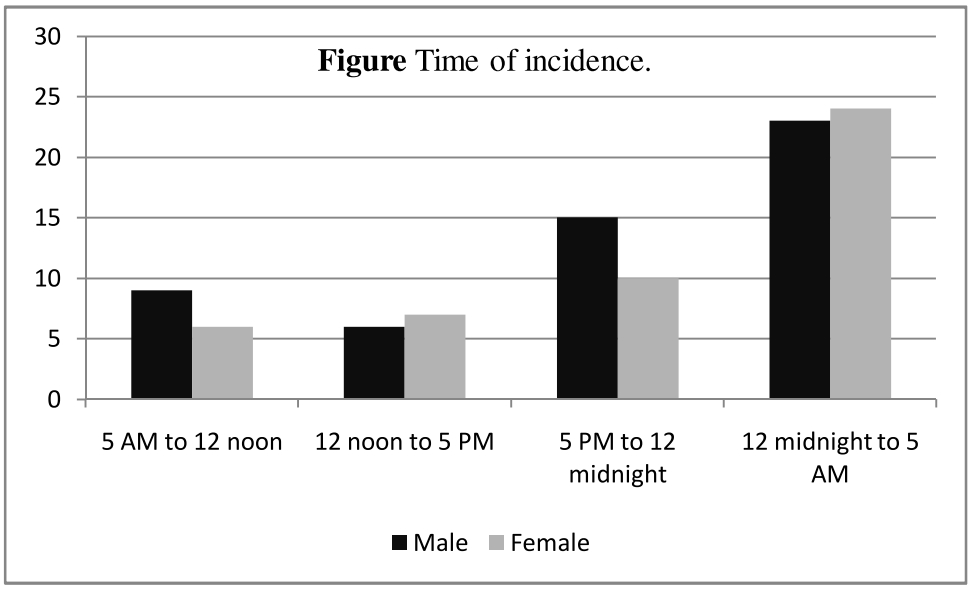

Figure Time of incidence.

mortuary of the Department of Forensic Medicine, GMCH, 285 cases were suicide. Fatal cases were thus worked out to be 18.2%.

Mukherjee,[6] in his study, found 446 cases of suicide out of total 3663 medicolegal autopsies carried out at the Calcutta Police morgue during five years from 1967-71. Suicide cases comprised 12.1% of the total autopsies.

Gupta,[7] in his study of 1104 medicolegal autopsies during the period of 6 May 1982 to 6 August 1983, found 118 cases of suicide comprising 10.68%. Thus, it has been observed that the overall rate of suicide has remained constant over several decades.

Seasonal incidence

In the present study, we found the largest incidence of suicide rate during the summer months of May, June and July and thereafter decreasing gradually. These findings are more or less in conformity with the common observation that high temperature and humidity and the resultant mental dullness and depression play their significant roles in enhancing the number of suicide during the summer times.[7-10]

Age and sex

In the present series, highest number of suicide victims came under the age of 15-24 years (adolescent) followed by the young adult group. Satyavathi and Murthi Rao[11] and Shah[12] in their series found the highest number of fatal suicides in the age group of 20-29 years. Ramadwar *et al.*[8] in his study found the highest incidence of fatal suicide cases in the 15-24 years age group (19.6%) followed by 19.4% in the 25-44 years group. Gupta[7] found highest number of suicide cases in the adolescent age group. High incidence of suicide in adolescence and young adults, a phenomenon, can be attributed to their emotional instability and impulsivity. This may be compounded by their love for experimentation with drug of addiction.

Out of the total 100 fatal suicide cases in our study, number of female predominated over the males. A higher rate of suicide by female have been reported in their studies by Shah,[12] Satyavathi and Murthi Rao[11] and Singh *et al.*,[13] a male:female ratio in 1:1.9, 1:1.06 and 1:1.14 in Sourashtra, Bangalore and Delhi state respectively. However, in general, the number of male suicide predominates over female in most of the countries of the world including India. Male:female ratio is believed to be 3:1 worldwide. A high female suicide rate as reported by various workers may be attributed to the prevailing custom of offering dowry, illiteracy of the women folk, their near total dependence on their husbands and in-laws and are frequent victims of torture.

Religion

Regarding religion in our series, 95% belonged to Hindu, three per cent Muslim and one per cent Christian. Though apparently it seems that Hindus commit suicide more often, actually it is in conformity with religious composition of the population of this region, where Hindus predominate. Hence an association of religion with suicide is inconclusive. Das Gupta and Tripathi[9] reported 92.3% of Hindus and only 2.6% Muslim amongst the victim of suicide in Varanasi, India. Gupta[7] found similar results.

Community character

A large number of victims of suicide cases were from the rural origin (62%). This may be attributed to the fact that 80% of the people in our country live in rural areas. There is also serious dislocation and disorganisation of rural economy in the developing countries, characterised by rapid urbanisation where there is migration of skilled labour from the villages to the cities in search of employment (anomic suicide).[14]

Educational status

In the present study, primary level of education group dominated the series with 25% and the overwhelming majority were female (18%). Illiteracy and low level of educational and consequent total dependence of woman folk on their male counterparts of the society as a potent factor behind high female suicide in India has already been referred to. However, higher levels of education failed to

offer protection from suicide in male in the current study (13% graduates). This may be reflected from the fact of underlying depression and raising interpersonal conflict.

Marital status

Out of 100 cases of suicide victim, 52 were married while 43 unmarried. Among the female victims, 27 were married against 23 unmarried. Number of married and unmarried cases amongst male victims was 25 and 20 respectively. These findings suggest the complex dimensions of the act of suicide. Ramadwar *et al.*[8] in their study found a much greater number of married individual amongst the suicide victims as compared to the unmarried (5:1) in Nagpur. Mukherjee[6] from Calcutta reported a ratio of 3.2:1 between the married and unmarried suicide victims.

Though it is difficult to comment, the fact may be that, married people face more stresses while maintaining his family with little resources. As regards to divorce/separated group, the percentage of cases were two per cent each. Although the sample size is small to comment, it may be due to the fact that acceptance of this group to social stream is poor and subsequently they experience more life events leading to suicide.

Family type

In analysing the type of family, a majority of the victims in the present study were drawn from the joint families (77%), followed by nuclear (15%) and extended (seven per cent) families. Our findings in this regards are against the notion that joint family system in our society provide protection against deliberate self-harm. These may presumably attributed to the fact that our joint families are no longer the self-contended happy harmonious. Gradual erosion of traditional value system, growing unemployment, destruction of agricultural base and mad rush for material comfort have all made people discontented and hence no longer buffers its individuals from stress and strains. Gupta[7] found similar results.

Occupation

Occupation wise the preponderance of housewives over others might be understood from the fact of the female folk's total economic dependence on their husbands and in-laws, either due to illiteracy or poor levels of education that makes them easy victims of tortures by either husbands or in-laws. Reasons may also be attributed to the prevalent dowry system in our society. Our findings are similar with the findings of Gupta[7] who also found highest number of housewives in his 118 cases of suicide victims.

Socioeconomic status

Majority of the suicide victims in the present series came from lower income group with a family income level below 30,000 rupees per year (42%). This trend perhaps indicates that illiteracy combined with low income was a strong motivating force driving people for self-destruction in the District of Kamrup, Assam. Gupta,[7] in his study of 118 suicide victims in Varanasi, found 79.6% cases with low income group. Sharma *et al.*[15] however found a high rate of suicide amongst the unemployed poor (56.1%) followed by the lower middle income group (37.7%). Stengel,[16] on the other hand, stressed high incidence of suicide amongst the richer strata of the society in England and Wales during 1949-59. Stengel, in his study, found a high rate of suicide amongst the rich professional and business executive which could perhaps be attributed to high degree of independence enjoyed by these two groups.

Time of incidence

In the present series, an overwhelming majority of victim committed suicide during midnight and early in the morning. These findings are similar with the findings of Ohara[17] of Japan who found peak suicidal hours between 8:00 P.M.-4:00 A.M. Gupta[7] also observed similar trait. These findings show that perhaps the victims of suicide needed an environment of solitude as provided by the night hours for their self-destruction. Most of the women folk in India are fulltime housewives who are forced to spend their day time indoor with household works and taking care of children. Therefore, the night times become the perfect hours for self-destruction.

Motives behind suicide

The most frequent motive behind suicide in the present series was 'unknown' as reported by family members and relatives. Out of the 100 cases studies, 85 fall into this category. This reflects the complex nature of suicide, the underlying psychopathology and impulsivity of the suicide victims. Aggression and violence are important in understanding suicide. Classical psychoanalytic theory postulated the importance of aggression towards the self in suicide behavior.[18] Failure in love, scolding by parents, family quarrel along with unemployment constituted the major force behind suicide. These motives are generally considered by researchers like Shneidman,[19] Ohara,[17], Stengel,[16], Rao[20] to be the major contributing causes of suicide. Ill treatment by husband/in-laws constituted four per cent of cases, which again reflects the prevailing dowry system and near total economic dependence of women folks on others. In this regards, our findings are against the findings of previous author who found higher number of suicide victims following ill treatment by husbands and in-laws (32.2%).[7] This can be understood from the fact that unlike other Northern states, in this part of the country dowry system is less prevalent.

Methods adopted for suicide

Both sexes preferred hanging as a method of suicide. BPRD[2] of India reported hanging as the commonest method of suicide from Uttar Pradesh in 1978 (17.7%). Gupta[7] also found hanging as the commonest method of suicide in 20.3% out of the 118 cases he studied. It is to be noted that in the present study, maximum number of cases who committed suicide by poisoning were from rural background and belonged to the family of farmers. There is plenty of insecticide available in the vicinity and that may be factor of adopting poisoning as a method of suicide in that group. Gupta[7] recorded 38% of poisoning in his study.

History of substance abuse, mental disorder and chronic physical illness

Analysis of the mental condition of the victims based on history taking and examination of connected papers, our study revealed that eight per cent of the cases were suffering from major mental disorders (schizophrenia and depression). Ten per cent of the cases had history of abuse of alcohol or other psychoactive substances. Seven per cent suffered from chronic physical illnesses like arthritis, diabetes, tuberculosis and vitiligo.

Satyavathi and Murthi Rao[11] reported the existence of mental illness in 12% of cases in their series of suicide victims. Gupta,[7] in his series of 118 suicide victims, found 53.4% depressed and 5.9% having psychosis. Epidemiological surveys have demonstrated that the vast majority of completed suicides are in patients with diagnosable psychiatric conditions, where about 15-20% of patients with mood disorders will commit suicide, making these disorders among the lethal of medical conditions.[21] Depressive disorder and substance abuse constitute a particularly lethal combination and highlight the importance of recognising depression in the patient with alcoholism. In addition to the underlying risk for suicidal behaviour due to alcohol dependence itself, acute intoxication also increases the risk.[22]

In the present study, precise role of the bodily diseases as a force drawing the victims to suicide could not be worked out for want of adequate and reliable history. Incurable and painful disease as a potent motive behind self-destruction cannot be ruled out. According to BPRD in India,[2] 16.6% victims took their own lives driven by the agonies of painful or incurable diseases.

Abetment to suicide

In a majority of abetment cases, the motive behind was unsatisfied dowry demands and abettors were mother-in-laws. The successive BPRD reports[2] also reveal that this torture by the parents-in-laws leading young housewives to kill themselves is steadily on the increase through the past several years.

Summary and conclusion

Suicide is a complex, multidimensional phenomenon that has been studied from philosophical, sociological, and clinical perspectives. The overall rate of suicide has not changed in 45 years. Indeed, we cannot ultimately prevent suicide in a given patient or individual. However, it is clear that in treated population, the risk of suicide can be reduced.

In the present series, illiteracy and poor levels of education and consequent near total economic dependence on their husbands and in-laws appeared to be a major contributing factor behind suicide by the young Hindu housewives. Joint families appeared to have provided very little protection to those unfortunate victims of suicide, in the face of growing socioeconomic change and modern days of stress.

The methods adopted for committing suicide, in order of frequency, hanging, poisoning, and drowning and running over by train, reflect the available means of self-destruction in the community. Use of psychoactive substances, alcohol, and compounded by concomitant major mental and physical disorders, acted as a strong motivating force behind suicide.

Suicidal behaviour is a syndrome that cuts across rigid diagnostic lines. As such, it is important that this behaviour be addressed apart from, and in addition to, the ostensible underlying psychiatric condition. Knowledge of the epidemiology and demographics of suicide is essential to assessing the suicidal individual and their prevention.

A number of methodological problems which weaken, if not negate, is the random selection of the cases and information furnished by relatives and accompanying police personnel. The number of our subjects was relatively small; hence, it does not reflect the community at large. In summary, it may be concluded that suicide has to be understood from different perspectives—religious, philosophical, sociological, psychological, and biological. Long term prospective studies of individual at risk for suicide are needed to provide conclusive evidence.

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