

Study of Seasonal Trends of Suicidal Deaths in Gulbahga Region of Karnataka

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Abstract

Suicide which is a common cause of unnatural deaths continues to be a major problem, a retrospective and prospective study of sociodemographic profile, causes of suicide, method of suicide and various trends of suicidal distribution in Gulbarga region was conducted over a period of five years from 1st January 2000 to 31st December 2004 using the data from hospital admission papers, police records, postmortem reports, suicide notes if any and history from the relatives & friends accompanying the deceased.

Out of 2528 autopsies conducted in District Hospital of Gulbarga, over a period of 5 years, 464 were suicidal deaths. Nearly two-third of the victim were from rural areas. Distribution of suicidal cases showed slight male preponderance, majority of the victims being illiterate, majority at a time interval of 0600 to 1200 hrs with no significant distribution in day or month wise trends. Poisoning was the most common modality of suicide followed by hanging and the least being the firearm injury. Chronic illness was the most common reason for suicide. Psychiatric illnesses, financial crisis, harassment by in-laws were the other main reasons for suicide in majority of the cases. Victims occasionally left behind the suicide note.

Key Words: Suicide, seasonal trends, chronic illness, Poisoning,

Introduction

All things that begin must end and so also with the life. One continues through the journey of life braving the trials and tribulations, joys and sorrows, successes and failures, health and sickness, till finally death terminates it. This is the normal course life takes hence death has to be viewed as a normal process to be followed after birth, and not as a penalty. It is a proven fact that man has always tried to intervene both the process of birth and death. In the pre-historic age, he had to kill others for self-protection, for food or for supremacy. Less often he killed himself due to certain beliefs and for some sins.

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Deaths are always painful for families and friends, but some are more tragic than others. Suicide plays particular havoc with the survivors. Saddest of all suicides are those of children and adolescents. It brings with it an element of intense guilt, shame and at times anger among the family members along with the normal pain, loss and agony that accompanies death. Suicide is considered stigma on the family by the society.

Suicide is legally defined as “the intentional act of self-destruction committed by someone knowing what he is doing and knowing the probable consequences of his action”.¹

Suicide not only causes major trauma to family members it is a drain on our economy with loss of useful reproductive human resources. It has become a major health problem. Around 7,50,000 people commit suicide every year around the world. Suicide is among the ten leading causes of death for all ages in most of countries. In some countries it is among the top three cause of death for people between 15 and 34 years. Rates per year as high as 1 suicide per 1000 population (e.g. Falkland Islands) and 1 suicide per 1500 population (e.g. Hungary) are reported². National Crime Records Bureau (NCRB) states that suicide is among the top ten causes of death in India. The numbers of suicides in the country have risen from 40,000 in 1968 to 1.3 lakhs in 2007, which means an increase of 175 percent in four decades. According to a statistics provided by National Crime Records Bureau the national incidence rate stands at 10.8 per lakh per year³.

Considering these facts about the magnitude of the problem an attempt has been made in the present study to make an analysis of suicide in terms of various epidemiological features.

The study also attempts to know the various trends in the suicidal cases and factors leading to suicide. This may help the different professionals actively involved with the problem of suicide though not for its complete prevention but at least for reduction in the rate of suicides to a minimum.

Material and methods

The present three years retrospective and two years prospective study comprises the profile of all 464 suicidal deaths that were subjected to autopsy at Government General Hospital, Gulbarga during the study period i.e., from 1st January 2000 to 31st December 2004. During the study period, out of the total of 2528 autopsies were conducted out of which 464 deaths were suicidal in nature.

Data was obtained from hospital case records, police records suicide notes left over by victims, postmortem reports of all suicidal cases and also by direct interrogation from the relatives, friends and other accompanying the deceased.

Only cases with clear history of suicide were included. All doubtful cases, where the circumstances of death are not conclusive or where the findings of the case are not consistent with history of suicide were excluded from the study.

A proforma was evolved to get uniform information from all the above mentioned sources.

Observations and Results

The observations were tabulated in tables 1 to 5 and figures 1&2. From the present study the following points are deduced.

- Suicide is the second most common manner of death (18.35%), the first being accidents i.e., 64.12% of all autopsies conducted.
- Suicide cases showed slight male preponderance with male to female ratio of 1.03:1.00 Rural victims outnumbered the urban victims constituting 306 cases (65.95%).
- Poisoning was the method of choice in rural victims i.e., 156 cases (50.98%). Hanging was the preferred choice in urban victims i.e., 57 cases (36.08%).
- Suicidal cases peaked at an interval of 06:00 to 12:00 hours with 187 cases (40.30%).
- There is no significant gender difference in days and month wise distribution of suicidal cases.
- Chronic illness was the most common reason for suicide i.e., 120 cases (25.86%).
- Majority of the victims were illiterate i.e., 290 (62.50%).

In educated persons suicide by burns and poisoning was much less compared to illiterates.

Table-1: Sex wise Modalities of Suicidal Deaths

Modality	Males		Females		Total	
	No	%	No	%	No	%
Burns	31	13.14	69	30.26	100	21.55
Drowning	17	7.20	19	8.33	36	7.76
Hanging	83	35.17	35	15.35	118	25.43
Poisoning	100	42.37	100	43.86	200	43.10
Rail Run	3	1.27	4	1.75	7	1.51
Jump from Height	1	0.42	1	0.44	2	0.43
Fire Arm	1	0.43	0	0.01	1	0.22
Total	236	100.00	228	100.00	464	100.00

Table 2: Relationship between modalities and Domicile of Suicide Victims

Modality	Males		Females		Total	
	No	%	No	%	No	%
Burns	31	19.62	69	22.55	100	21.55
Drowning	22	13.92	14	4.58	36	7.76
Hanging	57	36.08	61	19.93	118	25.43
Poisoning	44	27.85	156	50.98	200	43.10
Rail Run	3	1.90	4	1.31	7	1.51
Jump from Height	0	0.00	2	0.65	2	0.43
Fire Arm	1	0.63	0	0.00	1	0.22
Total	158	100.00	306	100.00	464	100.00

Table 3: Relationship between Educational Status and Modalities of Suicidal Deaths

Modality	Illiterate		Primary		Higher Primary		Graduate		Total	
	No	%	No	%	No	%	No	%	No	%
Burns	68	23.45	17	19.77	11	20.00	4	12.12	100	21.55
Drowning	24	8.28	6	6.98	2	3.64	4	12.12	36	7.76
Hanging	59	20.34	26	30.23	16	29.09	17	51.52	118	25.43
Poisoning	132	45.52	36	41.86	25	45.45	7	21.21	200	43.10
Rail Run	6	2.07	1	1.16	0	0.00	0	0.00	7	1.51
Jump from Height	1	0.34	0	0.00	1	1.82	0	0.00	2	0.43
Fire Arm	0	0.00	0	0.00	0	0.00	1	3.03	1	0.22
Total	290	100.00	86	100.00	55	100.00	33	100.00	464	100.00

Table-4: Reasons for Suicidal Deaths

	Reason No	Total %
Chronic illness	120	25.86
Psychiatric Illness	88	18.97
Financial Crisis	65	14.01
Harassment by in-laws	61	13.15
Domestic Problems	37	7.97
Academic Failure	17	3.66
HIV Positive	14	3.02
Extramarital Affair	10	2.16
Sex Assault	08	1.72
Love Failure	07	1.51
Death of Family Member	05	1.08
Drug/Alcohol Abuse	05	1.08
Infertility	05	1.08
Others	12	2.59
Not Known	10	2.16
Total	464	100.00

Table-5: Distribution of Suicidal Deaths according to Time Intervals

Time Intervals	Males		Females		Total	
	No	%	No	%	No	%
00:00-06:00	18	7.63	23	10.09	41	8.84
06:00-12:00	94	39.83	93	40.79	187	40.30
12:00-18:00	63	26.69	71	31.14	134	28.88
18:00-24:00	61	25.85	41	17.98	102	21.98
Total	236	100.00	228	100.00	464	100.00

Figure-1:- Day wise Distribution of Suicidal Deaths

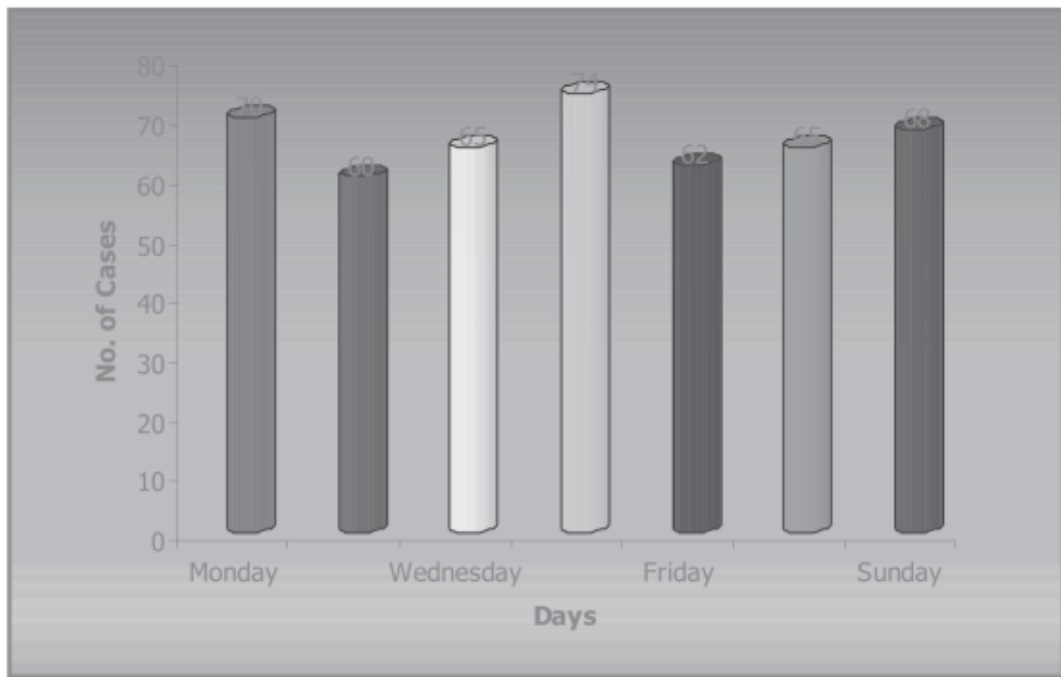
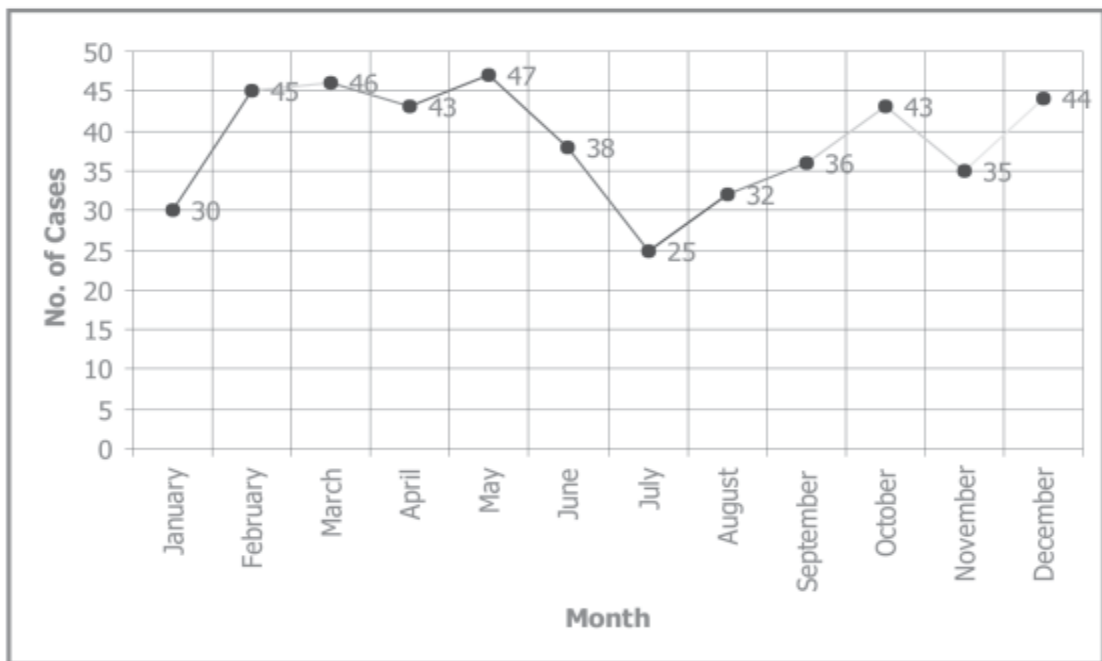


Figure-2: Month wise distribution of Suicidal Deaths



Discussion

In spite of its wider perspectives, the etiology of suicide is ill understood. There is no unanimity among different workers from different parts of the world as has been presented in the review of literature. A proper understanding of these etiological aspects with respect to that region is a prerequisite for suicide investigation.

The present study consisted of 464 people who committed suicide and were subjected to autopsy at Government General Hospital, Gulbarga. The results of the present study were compared with the studies by different workers from other parts of the country and abroad as well.

Sex

The total study population consisted of 464 cases of which 236 were males (50.86%) and 228 were females (49.14%), thus showing very slight male preponderance with male to female ratio of 1.03:1.0.

The gender-wise distribution of cases in the present study coincides with the study conducted by Hittiarachchi ⁴, Lee Peng K ⁵, Le Comte ⁶, Sidsel Rodge ⁷, Chavan KD ⁸ and Chandrashekhar TN⁹. But the findings of the present study are in contrast with the studies of Shukla GD ¹⁰, Ponnudurai R¹¹ and Singh B¹² in which female predominated over the males.

Domicile

In the present study, rural group constituted the maximum number of suicide victims i.e., 306 (65.95%) and the rest were from the urban areas i.e., 158 (34.05%). The findings of the present study coincides with the study of Sahoo PC ¹³.

Education

Nearly two thirds i.e., 290 (62.5%) victims were illiterates followed by 86 (18.53%) victims having primary education, 55 (11.85%) victims having higher primary education and the graduates constituted the least with only 33 (7.11%) cases. Males were significantly less educated compared to females ($\chi^2=17.14$; $df=3$; $p<0.001$). The proportion of graduate females was very much less compared with their counterparts.

The observations made in our study fall in line with the study conducted by Shukla GD ¹⁰, whereas they are in contrast with the study conducted by Chandrashekhar⁹ in the city of Bangalore, where 68% of the suicide victims were literate and 32% were illiterates.

Time

The commission of suicide is not time bound and appears to be round the clock. But it peaks at a time interval of 0600 to 1200 hours during which 187 people committed suicide (40.3%) and least number of cases was found at a time interval of 0000 to 0600 hours i.e., 41 (8.84%).

There was no significant gender difference in the time wise distribution of cases. This peak could be due to the fact that the victim will feel secluded and isolation at the moment.

This observation from our study is consistent with that of Antonio Preti¹⁴ who states that there is a clear diurnal variation in the distribution of suicides with a peak in the late morning hours and a subsequent decrease to a trough in night hour.

Whereas Ponnudurai and Jayakumar¹¹ in their study state that fateful hour in a considerable proportion of cases (43.6% in males and 35% in females) fall between 1800 to 2400 hours. The next chosen time interval was from 1200 to 1800 hours.

In contrast He¹⁵ in their study state that there was no obvious pattern to the time of the day when the suicide occurred. Suicides occurred throughout a 24 hours period with 64% victims dying between 7PM and 7AM and 36.1% between 7AM and 7 PM.

Day Trend

The suicidal deaths were not clustered around any particular day of the week showing almost even distribution of cases with maximum on Monday i.e., 70 (15.09%) and minimum on Tuesday i.e., 60 cases (12.93%). There was no significant gender difference in the day wise distribution of the suicidal cases. Total number of cases on weekdays was 331 i.e., 71.34%) and on weekend days was 133 (28.66%).

These observations are consistent with those of McGovern¹⁶ & Jari Haukka¹⁷. Given that fair number of suicides occurred over the weekend period, it is possible that they were lonely for these couple of days. In a state of depression, this feeling of loneliness would be heightened and might lead to suicidal tendency.

But observations made by Le Comte⁶ are not consistent with the present study where he recorded lowest number of cases on Sunday with Monday being the maximum.

Month Trends

The study of seasonal variation in suicidal deaths constitutes a vital parameter in terms of understanding the possible sociological and etiological determinants of suicide and its prevention. All the 464 cases of suicidal deaths spread over five years of the study were perennial and distributed almost evenly throughout the 12 months with maximum in the month of May i.e., 47 (10.13%) and minimum number of cases in the month of July i.e., 25 (5.39%).

The observations similar to our study are found in the works of McGovern¹⁶ Le Comte⁶ and Dhatarwal SK¹⁸ with peak of suicidal deaths in the summer months of April, May and June.

But this is contrary to the expected that the suicides occur more frequently in the winter months. The reasons as to why people choose these particular periods remain unknown.

In the yesteryears suicidal deaths showed a clear seasonal variation with spring peak for males and spring and autumn peak for females. But now there is a significant reduction in the proportion of variance accounted for by season over a period of time as is evidenced from the literature^{19,20,21}

Reasons for Suicide

Chronic illness tops the list of reasons for suicide with 120 cases (25.86%) followed by psychiatric illness with 88 cases (18.97%). Death of family member, drug/ alcohol abuse and infertility were the causes for minimum number of suicidal deaths accounting for 5 cases each (1.08%).

The findings of our study are consistent with those of Chavan KD⁸ and Lee Peng⁵ where chronic illness was the chief cause for suicide in 23.01% and 57% respectively.

Modalities of Suicide

Various modes of suicide in a region depends upon variety of factors ranging from availability and access of the method to the socioeconomic status of the individual and also on the prevailing cultural and religious influences.

It is observed from the present study that poisoning was the most common method of suicide with 200 cases i.e., 30.99%. Next common methods were hanging (25.43%) and burns (21.35%). This is consistent with the studies conducted by Chavan KD⁸, Dhattarwal SK¹⁸, Le Comte⁶, Sidsel Rodge⁷, Hettiarachchi⁴ and Shukla GD¹⁰ having 69.8%, 49.8%, 28%, 81.6% and 22.6% of cases of poisoning respectively.

But findings of Ponnudurai R¹¹ with 37.9% cases, Fimate²² with 53.7% cases, Sahoo PC¹³ with 46.98% cases, Alice Seabourne²³ with more than 50% cases, Louise Ramsay²⁴ with 86% cases, McGovern¹⁶ with 49% cases indicate hanging as the most preferred method of suicide. Tan²⁵ and Lee Peng⁵ in their studies have shown that jumping from height was the most common mode of suicide in Singapore with 58.4% and 62.3% of cases respectively. Burning was the preferred method of suicide in 39.8% cases in study conducted by Singh B¹² in Delhi region and gun shot injuries was the most common method with 77.4% cases in the study of Jeff Lee²⁶ in California.

Poisoning, hanging, burning were the three most common modalities of suicide accounting for 90% of the cases of the present study. Drowning (7.76%), getting runover by trains (1.51%) were rare methods. Jumping from height (0.43%) and firearms (0.22%) were the least common methods employed.

As would be apparent from the table-7, there was a significant difference between the two sexes with regards to the method of suicide ($\chi^2=33.94$, $df=4$, $p<0.001$). More than two thirds of burns cases (69%) were females. This is consistent with the observations of Chavan KD⁸, Singh B¹², Shukla GD¹⁰. Hanging was most commonly employed by males with 83 cases (70.33%) and merely 35 females (29.67%) used this method. This observation falls in line with those of Chavan KD⁸, Shukla GD¹⁰ and Fimate²².

Poisoning and jumping from height were equally distributed among both sex groups. Violent methods like use of firearm were used exclusively by a male victim in the present study. Insecticides were the most common type of poisons utilized by the victims. This could be attributed due to the easy availability and lack of stringent laws regarding their use. These accounted for 148 out of 200 cases of poisoning. Sleeping pill overdose was the next common with 23 cases and the exact nature of poison was not known in 29 cases.

Mode and Domicile

It is observed from the present study that the relationship between the modalities and domicile of suicide victims was significant ($\chi^2=35.91$, $df=4$, $p<0.001$). In rural areas maximum number of victims i.e., 56 (50.98%) preferred poisoning as a suicidal modality probably because of the easy accessibility of the rural people to the insecticidal poisons related to the agricultural works. The least constituted jump from height i.e., 2 (0.65%). In urban areas, the preferred modality was hanging i.e., 57 (36.08%) and least constituted by firearms i.e., 1 (0.63%) cases. Material is not found in the literature to compare with the present study.

Mode and Education

Among the illiterates and victims having primary and higher primary education, poisoning was the method of choice for suicide i.e., 132 (45.52%), 30 (41.86%) and 25 (45.45%) cases respectively, whereas in graduates, hanging was the preferred modality of suicide i.e., 17 (51.52%) cases.

It can be deduced from our study that there is a decreasing distribution of burns and poisoning cases as the education status of victim increases.

Comparison could not be made with the present study due to lack of literature in this regard.

Suicide Note

Suicide note plays an important role in confirming the cause of death and is an essential component of Psychological autopsy. In the present study suicide notes were found in 6% cases. This is lesser as compared to study conducted by Jeff Lee²⁶, McGovern¹⁶ & Lecomte⁶ where suicide notes were found in 19%, 35% and 40% of the cases respectively. This could be due to the proportionately high number of illiterates among the victims i.e. 290 cases (62.50%).

Conclusion

Few tragedies are as devastating as suicide especially of a young person. As suicide continues to be a major problem we need to be aware of the common scenario so that a proper and thorough investigation can be performed

From the present study, it can be concluded that most of the suicides were from rural areas, males slightly more than females, more among illiterates, majority of them at an interval of 06:00 to 12:00 hours, occasionally leaving behind a suicide note.

Hanging, burns, drowning, run over by train, fall from height, firearms were the methods of suicide, poisoning being the most common method chosen by victims. Financial crisis, psychiatric illness, harassment by in-laws, academic failure, domestic problems were the reasons for suicide, chronic illness being the reason in maximum number of victims.

Suicide is a manner of death that is often difficult to accept by the family and can pose a challenge to death investigators. This study helps to identify people at risk and the common scenario involved. Only through better understanding of the entity we can properly assign the cause and manner of death and work towards its prevention in future cases.

Limitations of the Study

This is a study conducted in a tertiary care teaching hospital in the city of Gulbarga and may not reflect the complete scenario/ magnitude of the problem in this part of the country.

There may be good number of cases in the community, which might not have been reported at all. Some other cases might have been taken care of by primary health centre and hence exact incidence of the suicidal cases in the study cannot be determined.

The study period comprise of 5 years (3 years retrospective and 2 years prospective). Information about the decedents recent life events, behavior could not be obtained from relatives and friends in cases falling in the period of retrospective study and information was collected, in such cases only from autopsy reports, inquest report and hospital admission papers if any.

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