ORIGINAL ARTICLE

Family Characteristics of Suicides in Cameron Highlands: A Controlled Study

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Summary

Cameron Highlands has one of the highest suicide rates in the world, especially among Indians. Forty Indian families (19 suicides; 21 controls) were studied to compare family characteristics such as income, overcrowding, birth order of index cases of suicide, family history of suicidal behaviour or mental illness, marital disharmony, presence of alcohol abuse, availability of, and knowledge about, weedicides/insecticides, talk/threat of suicide among family members and experience of significant losses in the past year. Controls were matched for age, sex and educational level with the index cases of suicide. A significant difference was only found for one of the above factors, namely increased experience of significant losses in the past year in the family of index cases of suicide. More than 75% in both groups had alcohol related problems. About equal proportions in each group had a family history of suicidal behaviour and mental illness. There was more marital disharmony in families of suicides but this failed to reach significance. These results and methodological limitations of this study are discussed.

Key Words: Suicide, Parasuicide, Family characteristics

Introduction

The district of Cameron Highlands has one of the highest suicides rates recorded anywhere[1]. Indians were over represented in suicide in this district as in many parts of the world[1,2,3,4]. Their rate may be as high as 150 per 100,000 population at risk.

Many studies have looked at the causes of suicide, from the sociological model of Durkheim to more recent psychiatric explanations. The prevailing opinion is that psychological distress caused by psychiatric disorders such as depression, alcoholism, schizophrenia and personality disorders are the underlying causes for suicide. This has been borne out by psychological post mortem studies such as that of Robins[6] and Barraclough[7].

The demographic and psychosocial factors relevant to suicides and parasuicides have been extensively studied, but there is less information about the families in which suicides occur. The Indian community in Cameron Highlands is largely a farming community. Many are workers in tea estates, vegetable farms and flower nurseries. Most families have their own plot of land to farm in their spare time. Large amounts of weedicides and pesticides are used in the farming. These agricultural biocides are often carelessly stored on the farm in highly concentrated forms. It has been suggested that many distressed individuals have ingested these substances in an "attempted suicide" but ended up as suicide because of the highly concentrated lethal substances that were readily available and compounded by the relative isolation of these farms making quick medical assistance difficult to obtain[1].

If the above assertion is true then there should be little or no differences between suicides and parasuicides. This was partly shown to be true in the earlier study

in this area quoted above. The aim of this study is to describe the family characteristics of suicides in this district, the study hypothesis being that one or more of the following family factors would differentiate suicides from controls, namely, economic status, overcrowding, birth order, religiosity, disharmony in the family, family history of mental illness as well as of suicidal behaviour, alcohol related problems, significant losses experienced by the family or individual in the previous year prior to the suicide, and relative isolation from the outside world.

Method

More than 100 cases of suicide were identified from the suicide register of the Cameron Highlands Hospital and the police register of unnatural deaths at the Tanah Rata police station. More details are given on the reliability of these data in a previous article[1]. In this study, interviews using a semi-structured questionnaire were conducted with the heads of households (usually parents or spouses), failing which an adult informant who lived with the suicide at the time in question was interviewed. Informants were all interviewed in their homes. If they claimed to have forgotten the circumstances of the suicide or were otherwise unwilling to participate in the study, they were excluded.

Controls were obtained from the outpatient clinic attenders at the Cameron Highlands Hospital, and were matched for age, sex, marital status and educational level. Religiosity and isolation were arbitrarily defined as frequency of attendance at place of worship per week and frequency of visits to the nearest town per month, respectively.

Statistical tests done were Chi-squared test (where appropriate with Yates correction) and significant difference between means.

Results

Only 19 families of suicides were available for the study in the two-week period the author spent in C.H. Some were out at work, but many had moved out of the area ostensibly because of the shame experienced by the family after the suicide. Cases and controls were about evenly matched for age, sex and educational level. There were 10 females in each group and the mean age of suicides was 28.5 years (range = 12-73), and that of controls 28.6 years (range = 11-75). There were slightly more singles among suicides but this difference was not statistically significant. Suicides on the average had 5.4 years of education as compared to 6.3 years for controls, again not a significant difference.

Characteristics of suicides

Of the 19 suicides, 17 had died by ingestion of poisons and two by hanging. Ten (53%) out of the 19 had shown some evidence of psychological distress like disturbed sleep, appetite or mood disturbance. Five (26%) had, to the knowledge of the informant, sought help or talked to others about their distress prior to their suicide.

Characteristics of suicide versus control

As to the religiosity of suicides versus controls, equal numbers, that is eight, of suicides and controls were considered as not religious as defined in the study. Slightly more controls[13] were considered very religious as compared to suicide[9] but the difference was not statistically significant.

The birth order of suicides was slightly more than that of controls 4.1 (range 2 – 7) versus 3.4 (range 1 – 10), again not a significant difference.

Family characteristics

This is summarised in Table I where some salient features are highlighted. Families of controls had higher incomes, and their homes were less crowded, but both these differences were not statistically significant. There were no significant differences between suicides and controls in terms of birth order, family history of mental illness, history of suicide or parasuicide in the family. There was more marital disharmony reported in families of suicide (6 versus 2 in controls) but this difference failed to reach significance. About 79% of families of suicide and 67% of families of controls had alcohol related problems. About equal members of both groups were in possession of agricultural pesticides stored either in the house or in

their farm. About 16% of key informants in families of suicides and 24% of controls were not aware of the highly poisonous nature of these chemicals. Their answers to the questions: "what are the effects of ingesting weedicides/pesticides?" ranged from "I don't know" to "I'm not sure". Two of the controls positively stated that these biocides were not dangerous whereas none thought so in the families of suicides. Both groups have equal opportunity to visit the towns.

There had been threats of suicide among family members in both groups – 16% in families of suicides and 24% in families of controls. Hence threat and talk about suicide did not significantly differ between these two groups.

The only factor studied that showed a significant difference was a significant loss in the one year preceding the suicide for the study sample. Sixty-three per cent of suicides had experience of significant loss such as failure in examination, failure in love, loss of health or death among relatives; whereas only 29% of controls had experienced such things in the year preceding the interview ($p<0.05$).

Discussion

Before going on to discuss the above findings, some comments about the methodological limitations of this study are in order. The sample size is small and this may have prevented significant relationships from emerging. Also, the retrospective nature of the study of events among suicides limit the usefulness. However it was theorised that suicide being a highly emotionally significant event, the circumstances surrounding it may be better remembered than those in other comparable periods of time. Besides, a suicide in the family causes a great deal of soul-searching and therefore are likely to be recollected more easily. But this may produce retrospective falsification in that people try to give "meaning" to the significant events in their lives and tend to remember those things seen as meaningful, whereas normal controls would have forgotten about these things happening to them[8]. Ideally, of course, such a study should be done within a week or two of the suicide taking place, as is done with psychological post-mortem studies. These limitations serve as cautions in interpreting this data.

Granted that there are limitations, some findings in this study deserve comment, namely, the lack of any significant difference between index families and controls in almost all variables; a high prevalence of alcohol related problems in both groups; and the surprising ignorance of almost one in five of the respondents about the harmful effects of the agricultural biocides they were using.

Table I
Demographic features of suicides and controls

Variable		Suicides n = 19	Controls n = 21	
Age:	Mean (years)	28.5	28.6	NS
	Range	12–73	11–75	
Sex:	Male	9	11	NS
	Female	10	10	NS
Monthly Income (Mean)		RM 754	RM 841	NS
Years at School		5.4	6.3	NS
Marital Status:	Single	13	10	NS
	Married	6	11	

In an uncontrolled descriptive study of the same population, Woon[9] described some of the stressors experienced by suicides. The present study, however, does not confirm stressors as causes of suicide for this particular population, with the possible exception of exit life-events (losses). Factors such as alcohol abuse in the family, poverty, family history of mental illness or suicide, overcrowding, marital or parental disharmony and relative isolation did not differentiate the two groups. Neither did family income levels, religiosity, birth order, availability of poison and knowledge or lack thereof about the harmful effects of poison. It is possible, of course, that significant differences were not picked up because of the low statistical power of this small sample.

Another factor that bears comment is the high prevalence of alcohol abuse in this sample (75% of the combined sample), which though not significant between groups, may give rise to high levels of family stress. A high prevalence of alcoholism among Indians has already been demonstrated in a General Hospital sample[10]. A vigorous and credible response is needed to deal with this problem.

Based on evidence from British data, Kreitman has postulated the "availability of method hypothesis" in explaining differential rates of suicide[11]. On the surface the present study does not show evidence for this hypothesis, since both groups have equal availability to poisons, but on deeper reflection the writer thinks that this is the best way of explaining the data discussed here. Except for a higher chance of experiencing loss-related life-events, and consequent psychological distress, suicides do not differ significantly from controls. It is postulated that under the duress of such distress people ingest the most widely available substances around – the agricultural biocides which, in the writer's observation, are often carelessly stored in highly concentrated forms, and not kept under lock and key. Many die, because of the

Table II
Comparison between families of suicides and controls

	Suicides n=19	Controls n=21	
Overcrowding (No of persons per room)	3.6	2.7	NS
Birth Order	4.1 (Range 2–7)	3.4 (Range 1–10)	NS
Family History of Suicidal Behaviour	4	5	NS
Family History of Mental Illness	2	2	NS
Family/Marital Disharmony	6	2	NS
Alcohol Problems	15	14	NS
Poisons Available	14	16	NS
Have Knowledge About Poisons	16	16	NS
Family History of Suicidal Threats	3	5	NS
Significant Loss in Previous one Year	12	6	$p < 0.05$
Visited Town >3 Times per Month	5	7	NS
Very Religious	9	13	NS

lethality of these substances compounded by the fact that the tea plantations and farms are located far from the hospital. People in the lowlands who are in distress tend to take sleeping pills or paracetamol or some other innocuous substance and survive. In a study of parasuicides in Klang it was shown that only one-third of attempters ingested an agricultural biocide[12], whereas in Cameron Highlands about 66% used the above substances[1].

Therefore it is argued that many if not most Cameron Highlands suicides are not "true suicides" but are "cry for help" attempts who are ending up as suicides because of the easy availability of lethal substances, without which the suicide rate would be much lower.

Educating the public on the lethality of these substances is vital. Many in this study are ignorant of the danger of these chemicals.

It appears reasonable to suggest that renewed efforts need to be made to limit the easy availability of such poisons, at least to make them less accessible. It is not possible to call for a banning of these biocides because of their economic value, but it is possible to enact by-laws controlling their storage and easy availability so that impulsive and angry acts of ingestion of these substances is reduced. These issues have been discussed in detail elsewhere[13].

Conclusion

Bearing in mind the limitations of this study, it is concluded that in most respects the family characteristics of suicides are similar to that of controls. There is a particular need for counselling services for those who have experienced loss-events in the recent past as they appear to be particularly vulnerable to engage in suicidal behaviour, which given the availability of a highly lethal method in the isolated villages of Cameron Highlands, leads to a high rate of suicide.

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