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TECHNICAL NOTE

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Pattern and Trend of Deliberate Self-Harm in Western Nepal

ABSTRACT: Acts of deliberate self-harm (DSH) not only affect the people directly involved, but also have grave psychological and social impact on the family and community. In the present study, a cohort of 173 cases of DSH reported from April 2002 to March 2005 was retrospectively analyzed, by perusing the medicolegal register maintained by the Emergency Department at the Western Regional Hospital, Pokhara in the Western Development Region of Nepal. The data were entered and analyzed using SPSS Version 10.1. More than two-thirds of total cases were females. About 60% of cases were observed in the age group of 15–24 years. Poisoning (89.6%) was the most preferred method of deliberate self-harm. Organophosphate pesticides were consumed in nearly two-thirds of the poisoning cases. The majority of cases were reported during the months of May to July and had occurred during the last quarter of the day. More than a twofold increase was observed in the frequency of cases during the 3-year study period. The said observations were compared and contrasted with the available literature across the globe. The presentation is concluded by highlighting the limitations encountered in Nepal and the scope to overcome the same.

KEYWORDS: forensic science, deliberate self-harm, attempted suicide, Nepal, poisoning, hanging, pesticides, organophosphates

Deliberate self-harm includes parasuicide and suicide that are social pathologies increasing globally. In 2003, World Health Report stated that each year around 900,000 people commit suicide alone (1). It is one of the top 10 causes of death in all age groups and top three among 15–44 years worldwide (2) and accounts for 1.8% of global burden of disease (3). Suicide deaths far exceed deaths caused by homicide and war. Among the developing countries of Asia, Sri Lanka has one of the highest suicide rates in the world reaching 118 per 100,000 in some regions of the country (4).

Deliberate self-harm not only affects people directly involved but also has serious psychological and social impact on the family and community. It is said that every act of suicide intimately affects at least six people around it (2). Epidemiology of both these types of cases needs to be studied to be able to control the problem of suicide as many parasuicide cases eventually end up in completed suicide (5). Data from developing countries in most instances is an underestimation (4,6,7). There is a paucity of literature on deliberate self-harm in the Western Development Region (WDR) of Nepal. Thus, an attempt is made in the present hospital-based retrospective study to describe the pattern and trend of deliberate self-harm in Western Nepal from the medical records available.

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Materials and Methods

The landlocked Himalayan country of Nepal, sandwiched between India and China, is one of the poorest countries in the world with a population of around 25 million. The country is divided into five administrative regions. The present retrospective study was conducted in the WDR of Nepal. All cases of deliberate self-harm registered during the period extending from April 2002 to March 2005 in the medicolegal register maintained by the Emergency Department of the Western Regional Hospital formed the cohort for the study. Data were entered and analyzed using SPSS, version 10.1, statistical analysis program (SPSS, Inc., Chicago, IL).

Results

A total of 173 cases were registered as deliberate self-harm in the medicolegal register during the study period. Addresses were recorded for only 133 cases, of which 83 (67.5%) were from Kaski district and the rest were from other districts in the WDR. More than 60% of cases from Kaski district belonged to rural areas. Urban–rural differences were not mentioned for other districts. Nearly two-thirds of the total cases (n = 107) were females. The median (25% and 75%) age for male cases was 25 (20.5 and 38) years and for females 21 (18 and 25) years. In both males and females, 58.5% of cases were observed in the age group of 15–24 years (Table 1). Poisoning was the method employed in

TABLE 1—*Distribution of deliberate self-harm cases by age and sex.*

Age (years)	Gender (%)		Total (%)
	Male	Female	
<15	0 (0)	3 (2.8)	3 (1.8)
15–24	25 (43.9)	71 (66.4)	96 (58.5)
25–34	14 (24.6)	25 (23.4)	39 (23.8)
35–44	13 (22.8)	3 (2.8)	16 (9.8)
≥45	5 (8.8)	5 (4.7)	10 (6.1)
Total	57 (100)	107 (100)	164 (100)

Age was not entered in the medicolegal register in nine cases.

TABLE 2—*Methods employed in deliberate self-harm.*

Age (Years)	Gender (%)		Total (%)
	Male	Female	
Poisoning	53 (85.5)	102 (91.9)	155 (89.6)
Hanging	6 (9.7)	6 (5.4)	12 (6.9)
Self-immolation	1 (1.6)	2 (1.8)	3 (1.7)
Sharp force injury	2 (3.2)	0 (0.0)	2 (1.2)
Drowning	0 (0.0)	1 (0.9)	1 (0.6)
Total	62 (100)	111 (100)	173 (100)

more than 89% of cases (n = 155) followed by hanging (Table 2). Of the 155 poisoning cases, nearly two-thirds (n = 101) of the patients were reported, or presumed from clinical signs, to have ingested organophosphate pesticides. The type of poison was not documented in the rest of the cases. Time and month of occurrence was known in 89 and 101 cases, respectively. Numerical considerations revealed that 44 cases occurred during the months of May to July (Fig. 1) and 39 subjects attempted the act during the last quarter of the day. More than a twofold increase in the frequency of cases was observed during the 3-year study period.

Discussion

The magnitude and impact of deliberate self-harm is such that there is a dire need for specific control measures to be adopted. These control measures should be based upon sound regional epidemiological knowledge of deliberate self-harm. Analysis of the trend of deliberate self-harm showed more than a twofold increase in the frequency of cases observed during the 3-year study period. While 36 cases were observed in the first year, it was 62 and 75 in second and third years, respectively. This indicates that the problem is increasing rapidly in this region as seen in the rest of the world (7).

More than half of the deliberate self-harm cases were seen in the age group 15–24 years followed by 25–34 years with 82.3% occurring in 15–34 years age group. These are the most common age groups involved worldwide (7) and are similar to the findings of a hospital-based study reported from Central Development Region of Nepal where 15–45 years of age was the group which had attempted most suicides (8). This is also consistent with the WHO statement that suicide is the third leading cause of death in the 15–34 years age group (2). Similar findings have been reported in the neighboring country, India (9). This denotes that deliberate self-harm mortality affects the economically active age group, thereby affecting the quality of life of the entire family and the community with dependents such as older people, women, and children surviving the victims. Regarding gender, females constituted about 64% of total cases. This sex distribution is similar to that reported by other researchers (8–11). The proportion of cases of either sex in different age groups reveals that the females who attempt suicide were younger than males with 66.4% of females falling in 15–24 years age group and 2.8% in 35–44 years, whereas for males the corresponding figures were 43.9% and 22.8%. In the age group of 45 years and above, only 4.7% of female and 8.8% of male victims were affected.

The majority of victims used poisoning especially pesticides as the method of deliberate self-harm followed by hanging. This is consistent with earlier reports that pesticide poisoning is one of the major modes of deliberate self-harm in developing countries (6,12–14). Several studies from developing countries show a similar pattern of pesticide misuse (9,15–17). According to the WHO and International Association for Suicide Prevention (IASP), intentional pesticide ingestion accounts for around one-third of suicides each year (18). In studies reported from neighboring India, organophosphates were the commonest pesticides consumed for deliberate

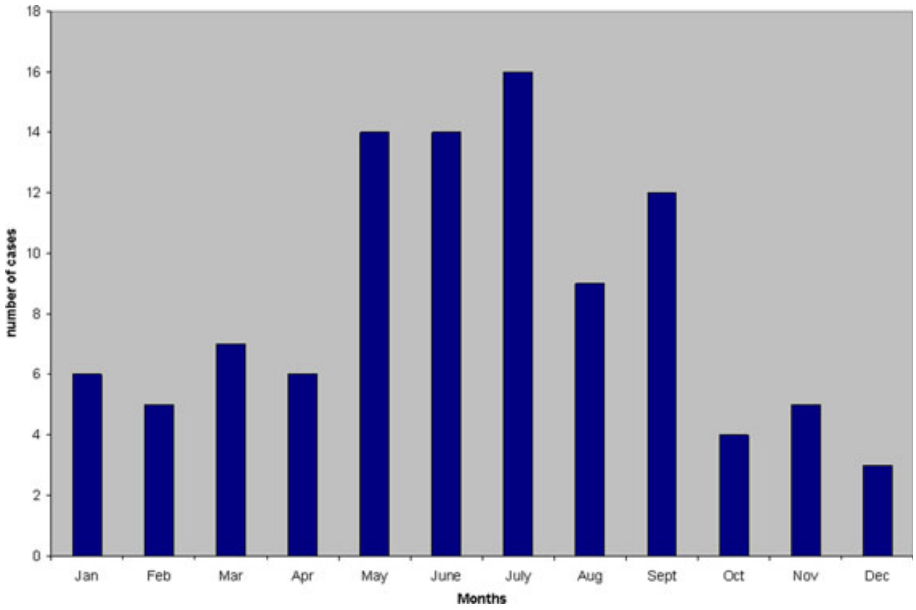

FIG. 1—*Month-wise distribution of cases (*n = *101).*

self-harm (14,19,20). The easy availability of pesticides at home is one of the major reasons for it being the most common means of deliberate self-harm in these countries as the population depends largely on agriculture. The stress of poverty and hopelessness compounds the dynamics of deliberate self-harm in the developing countries. This problem has now been recognized by organizations like the WHO and IASP, and they have started the process of abating the same by various means like reviewing the pesticide regulatory policies, training on safe use, and strengthening community interventions that minimize intentional and non-intentional risks of pesticide poisoning (18). Regarding the violent and nonviolent methods of deliberate self-harm used by different sexes, our study partially affirms the common knowledge that men usually have a preference for violent methods of deliberate self-harm. Although poisoning was the preferred method in both genders, proportionately more men resorted to hanging and used sharp force in our study. In a study of suicides in the United Kingdom, the most common method of suicide in males was hanging, while in females it was poisoning (21). This is in contrast to some of the industrialized countries where methods such as suicide by firearms, vehicle exhaust fumes, and poisoning by prescribed medications are more common. The availability of various methods determines their use and knowledge of their prevalence and relative proportion would be instrumental in planning prevention efforts. Fire is related to deliberate self-inflicted burns among Indian Hindu females (22). Although Nepal is predominantly a Hindu nation, deliberate self-harm by burns accounted for only 1.8% of the female victims. This is in contrast to a study from India where deliberate self-harm by burns in females accounted for 11.4% of the total fatalities (23).

Month-wise distribution of cases in our study shows that the maximum number of cases occurred in the months of May to July. A similar pattern has been observed in studies conducted in India, the United States, and Finland where deliberate self-harm peaks were seen in the spring and summer seasons (24–26). There are a number of studies put forth regarding seasonal variation of deliberate self-harm with some stating the presence and some absence of seasonal variation in deliberate self-harm rates. Preti and Miotto (27) suggested that seasonal variation depends on the method used. These variations have been hypothesized to result due to climatic conditions like temperature, sunshine, and social factors like festivals and holidays. They are also closely related to the psychiatric illnesses that result in suicide. It is important to know when the peak occurs so that preventive measures can be enhanced during those months and if reasons are known it would make preventive efforts more specific, reasonable, and cost-effective. It was interesting to note a diurnal variation of deliberate self-harm in our study. The number of cases showed a very sharp increase as the day advanced from morning to night, with 39 cases occurring in the last quarter of the day, followed by 33, 16, and 1 in third, second, and first quarter of the day, respectively. A study from the United States reported peak incidence between 6 and 9 PM in males and late afternoon in females (25). Another study in Italy showed a directly opposite effect with peak occurring in the morning hours and trough in the night (28). An Indian study reported a peak during daytime (20). Kanchan and Menezes (19) found that during day hours, afternoon was preferred by females and evening time by males for suicidal poisoning fatalities. It is unclear as to why these differences in diurnal variation occur in different regions. These diurnal variations may depend on sex, age, and method adopted. This kind of variation may aid in formulating preventive programs by including it in the mass awareness campaigns for the public to be aware of the time and be vigilant during these critical hours.

Conclusion

Our study has made an attempt to garner from the medicolegal register data source the epidemiology of deliberate self-harm in Western Nepal. It is not possible to plan appropriate preventive strategies without such region-based knowledge. Limitations exist and they arise primarily from the fact that this is a hospital-based study with data obtained from a source that was not originally meant for research. A major limitation of the study is that as the patients were not followed up beyond the point of emergency because the in-patient records were not appropriately maintained by the Medical Records Department of the hospital, we could not find out the mortality in the cohort.

The present hospital-based retrospective study of deliberate self-harm in Western Nepal shows an increase in trend of such cases during the study period and hence an urgent need for a program to counter the problem is required. The most commonly affected age group was the young productive group and females were more commonly involved when compared to males. Poisoning was the most widely used method by both sexes. Seasonal variation was seen with a peak in spring and summer months. Diurnal variations were observed and frequency of cases increased as the day progressed with peak in the late evening and night hours. This information would be useful in future research and planning to control the problem.

Our approach to the study reveals that databases need to be improved and strengthened in Nepal. More in-depth community-based studies are proposed in Western Nepal to gather epidemiological information on deliberate self-harm so that well-informed decisions regarding preventive actions can be taken.

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