

A review of trends in suicide and deliberate self harm in Sri Lanka

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Abstract

Sri Lanka is a unique country with an alarmingly high suicide rate overlapping with deliberate self harm. More lives have been lost as a result of suicide than due to ethnic conflict in Sri Lanka, during the last two decades. Over the past few decades scientists from medical and sociological disciplines have examined the causes, impact, and preventive measures for this phenomenon. This article aims at reviewing trends in suicide and deliberate self harm in Sri Lanka with special reference to the methods used. Information was gathered from the libraries of the Post Graduate Institute of Medicine, Sri Lanka Medical Association and the University of Sri Jayawardenepura and a collection of articles by the author.

Findings show that suicide in Sri Lanka had been documented in the early civilization and reports are mainly of prominent people in the society who took their lives. The methods used to commit suicide were violent. During British rule reporting of suicides were more organized and methods used gradually transformed from hanging to drowning and self poisoning. During the period from 1950 to 1995 the suicide rate has rapidly increased by eight fold. Sri Lanka was ranked first in the world in 1995 for the highest suicide rate of 47 / 100,000 and since then a gradual decline in suicides has been noted. Methods used were determined by the availability: agrochemicals remained the first choice and other substances including therapeutic substances emerged as other tools to commit suicide. Methods used showed a geographical variation. Suicides among the youth were common in the second half of the 20th century and in 2007, the same was true for females whilst in males the age at suicide increased to 45 - 50 years.

Introduction

Suicide is defined as an act with a fatal outcome that is deliberately initiated and performed by the person in the knowledge or expectation of its' fatal outcome (Gelder, *et al.*, 2006). Morgan, *et al.*, 1975, defined deliberate self harm as an act of non fatal injury to self, by means of physical injury, drug overdose or poisoning, carried out in the knowledge that it is potentially harmful, and in the case of drug overdose or poisoning the amount taken was excessive. Other definitions describe deliberate self harm as behaviour with a non-fatal outcome for which there is evidence (either explicit or implicit) that the person intended at some (non zero) level to kill him serf / herself (Pearson, *et al.*, 2001).

Thus by definition intention to end ones life is an integral feature in suicide where as such intention may or may not be a feature in deliberate self harm. However in Sri Lanka, due to use of lethal substances that are freely available to harm one self, a person might succumb to death although he may have not had the intention to die. Majority of suicides in Sri Lanka are the youth using lethal agents (Abeysinghe, 1997). Approximately two thirds were under the age of 30 (Silva, 1989), and 60% of female suicides occurred in those under the age of 25 (Silva, 1989). For most of the youngsters, self poisoning seems to be the preferred method of dealing with difficult situations and this partially explains the reason for high suicide rates in Sri Lanka.

Historical evidence of suicide is more or less dependant on the anecdotal evidence in the literature. The establishment of a legal structure that necessitated reporting of suicides resulted in a fair degree of accuracy and consistency in Sri Lankan data compared to other developing countries.

Evidence of deliberate self harm in Sri Lanka is not so solid, as there is no national system of collection of data. However this is the case in many countries (Dlekstra, 1987) reported that no country in the world collects national statistics for attempted suicide. However it had been argued that current trends in suicides and suicide attempts are closely related (Dlekstra, 1987).

Data from studies in centers with well defined catchment areas in several countries, indicated that hospital discharge rates of deliberate self harm paralleled suicide rates for the period from 1965-1980 (Williams, *et al.*, 1994).

However, in Sri Lanka, due to the unique nature of the overlap of suicides with deliberate self harm, the interpretations have to be made cautiously.

Furthermore, help seeking behaviour of citizens of the country significantly differs due to a variety of factors, which include stigma, perceived severity of

the act, availability of different systems of curative and supportive services and beliefs and practices of people. All those who harm themselves do not present to hospitals and even if they present, deliberate self harm is not a condition that requires notification or record keeping. Data on deliberate self harm is mostly derived from studies carried out by interested individuals and groups. Due to methodological differences these findings cannot be compared with confidence nor can they be generalized.

Method

This article reviewed available data on suicide and deliberate self harm in Sri Lanka with special reference to their trends. Data from the police department, department of census and statistics and available literature in selected libraries were systematically examined.

For analytical descriptive purposes data were categorized into three categories.

1. Early civilization and the time before British rule
2. British rule (1796-1948) and up to 1950
3. 1950 -1999 and 1st decade of the new millennium

Reason for this division would be explained in the discussion under each category.

Results

Methods used in suicide

1. Early civilization and the time before British rule

Sri Lankan literature has a major influence from its neighbour India. Stories regarding the previous births of Buddha had been propagated from generation to generation as Jataka stories.

(Harishchandra, 1998) in his book "Psychiatric aspects of Jataka stories" describes several acts of deliberate self harm and suicide. This includes a very unusual act by Queen Phoosati in Vessantara Jatakaya which is not described in western psychiatric literature. She has mentioned several suicidal acts, which included pulling out and eating her own tongue. The cause of death following this is most likely due to cardio respiratory failure, due to shock and haemorrhage.

In oriental cultures suicide was acceptable under certain circumstances such as "hara- kiri" in Japan and "sati" in India (Ministry of Healthcare and Nutrition, (Sri Lanka, 2008). In Sri Lanka the Mahawansa describes instances where suicide was committed as a sacrifice or as an act to preserve ones pride. One such instance is as follows; King Sirisangabo (247-249 AD), living a simple life as a hermit found that people were killing others to collect the bounty on his head imposed by Prince Gotabhaya. The king then revealed himself to a peasant and asked him to cut his head to collect the bounty. However, as he refused, the king himself separated his head and offered it to the peasant. This was done on compassionate grounds (Codrington, 1947).

Another such instance was in 497 AD, where King Kassapa went to battle with Mogallana, the rightful heir to the throne. During this encounter, king Kassapa turned his elephant to avoid a stretch of swamp before him. His troops, mistaking that their king was retreating, broke ranks and fled. Kassapa finding that his cause was lost committed suicide in the battlefield (Paranawithana, 1959).

Evidence from early literature on suicides in Sri Lanka shows more violent methods. In the contemporary era in western world violent methods as well as self poisoning were found. Cleopatra took her life by means of snake venom, while in Shakespeare's Romeo and Juliet, Romeo ends his life by the use of poison, assuming that Juliet was dead. Juliet then takes her life with the aid of Romeo's dagger when she finds him lying dead.

2. British rule

The establishment of the Police department in September 1866 (Sri Lanka Police Services, 2008) aided the gathering of data on suicides. This laid the foundation to access documentation on suicides under British rule. The ascertainment of a suicide is being done by a coroner, while deaths are registered by the local Registrar of Births and Deaths, who are most often lay people. Therefore, although registration of deaths is considered complete, the certification of the cause of death is not very reliable (Ruzicka, 1998).

However it is noteworthy that the system in Sri Lanka is comparable to developed nations and significantly superior to other Asian nations. Sri Lanka has constantly maintained statistics as quoted by Strauss and Strauss in 1953 (cited in Dissanayaka and de Silva, 1974) which mentioned the availability of figures on suicide in the country stating, 'The registration system is unusually good in comparison with those of other Asian countries & it is likely that figures are directly comparable to similar statistics for western nations.'

The first analytical description on suicide in Sri Lanka was by Dr John Davy, Medical Officer to the British army, who was posted in Sri Lanka from 1816-1820. He recorded that "Neither suicide nor murder was common among Sinhalese". It was also noted that Sir John Doyly, the British commissioner of Sri Lanka recorded that "Suicide was not infrequent among Kandyans and was committed owing to contempt for life and a desire for revenge" (Dissanayaka and de Silva, 1974 and Gunsekara, 1951).

Hanging was the most frequently used method of suicide from 1880-1950, and it accounted for more than 70% of all suicides during the period of 1880-1889 (Weerakkody, 1989). It was more frequent in males, whereas it was seldom seen in females (Ceylon Judicial Report, 1867). This proportion gradually reduced to 55% during the period of 1940-1949 (Weerakkody, 1989). The second most popular method during the early period was drowning, which was the preferred method used by females (Gunsekara, 1951). During this period, 13% of total victims used poison as the method of suicide (Weerakkody, 1989). In the western world, at the beginning of the century, self poisoning was common, the poisons being mainly corrosive liquids and other chemicals. The trend in these countries today is the extensive use of therapeutic substances (Kessel, 1965). The first medical report on self poisoning in Sri Lanka was reported in 1893. Early literature is virtually limited to descriptions of poisoning by arsenic, carbolic acid and opium.

3. 1950-1999 and 1st decade of the new millennium

Drowning was the preferred method used by females in the early period and according to Gunesekara 1951 (cited in Weerakkody 1989) it was popular among both men and women in the northern part of the Island mainly among Tamils. Transformation to poisoning was noted during this period. It is apparent from this review that trends in Sri Lanka commenced paralleling western trends by 1940-1950. Exact reason for this trend is difficult to find, however the following account could explain the phenomenon to a certain extent. The green revolution that commenced in this decade had an impact on the farming culture. Pesticides were made available freely with local vendors. No proper instructions were given regarding storage and destruction of unused chemicals, some of which were highly lethal. The health care delivery system of the country had not been geared for resuscitation and providing antidotes to this new epidemic. The use of freely available poisons at the doorstep removed the need to look for more violent methods of suicide for those who were contemplating self harm. Though the western pattern of self poisoning emerged during this period, the use of material was different.

With regard to statistics, historical literature provided evidence on the availability of more precise suicide statistics for Sri Lanka since the latter part of the 19th century (Weerakkody, 1989).

The first proven case of insecticide poisoning was in 1954 (Jayawardana, *et al.* 1966). In 1959, poisoning accounted for only 37% of the total suicides, while hanging was reported at 40 percent. By 1969 poisoning had risen to 72% of the total suicides and hanging had reduced to 15%, due to the increased availability of asetic acid which was used for rubber processing (Dissanayaka and de Silva, 1974). Since then, pesticide poisoning had been the commonest method of suicide. From 1987 - 1991 ingesting a poison or taking an overdose of drugs accounted for more than 80% of suicide attempts, and ingestion of organophosphorous chemicals was the single most important method, accounting for 60% of attempts. From information given in the patient records, use of alcohol before or during the act was reported in only 6% cases, (de Silva *et al.* 2000). According to a community survey of suicide and attempted suicide in three districts in Sri Lanka depression and alcoholism often went undetected in the community until suicide was committed (Abeyasinghe, 1997).

The effects of resettlement in irrigation schemes like Gal-oya and Mahaweli areas resulted in destabilization of the social structure of those who migrated internally. The sex ratio of these areas reversed the female preponderance pattern due to the disproportionate internal migration. In agricultural

resettlement areas norms and regulations of the society were virtually non-existent and also as there was a lack of emotional and social support, people found it difficult to cope resulting in an increase in attempted suicide. The suicides that took place are explained by the theory of anomic suicide (Kathriarachchi, *et al.*, 2004). Anomic suicide occurs when the regulation exercised by the society over an individuals' behaviour becomes too weak (Durkheim, 1951). In Mahaweli resettlement areas nearly 70% of reported deaths were suicidal (De Silva, *et al.*, 1996).

The latter half of the 20th century saw a revolution in the history of deliberate self harm and suicide in Sri Lanka. During this time interest and research generated enthusiasm and shed new light to the field though they were sporadic.

The reporting of suicidal deaths continued with the registration process of births and deaths and data collection by the Department of Police. Annual health bulletin of the ministry of health reported statistics of deaths, but suicides and self poisoning were not categorized as causes of death and reason for admission to hospitals. WHO has gathered information on suicide rates and compared it in different countries. The quality of data differs to a degree depending on the data collection method and reporting requirements (Ruzicka, 1998; Ministry of Healthcare and Nutrition, Sri Lanka, 2008). However these differences are applicable to all countries and it had been documented that Sri Lanka has a very good method of collecting information (Kathriarachchi, 1996). It is reasonable to conclude that inferences drawn on these data are reliable.

Is the changing trend during 1950 to 2008 parallel with the global situation?

In the West at present, use of domestic gas, hanging and use of fire arms by males and use of medication by females in suicide had been transformed to the use of medicines by all, mainly due to availability (Sainsbury, 1973). Almost all cases were due to psychotropic drugs mainly, and also benzodiazepines, barbiturates and other analgesics to a lesser extent (Morgan, *et al.* 1975). In the United Kingdom 90% of the cases of deliberate self harm involved drug overdoses and the most commonly used drugs were paracetamol and aspirin (Gelder, *et al.* 2006; Owens, 2005).

Research in high-income countries indicates that the main potential contributors to temporal trends in suicide rates are: economic recession, increases in divorce, changing levels of alcohol misuse, periods of war, and improvements in the treatment of mental disorder and changes in the

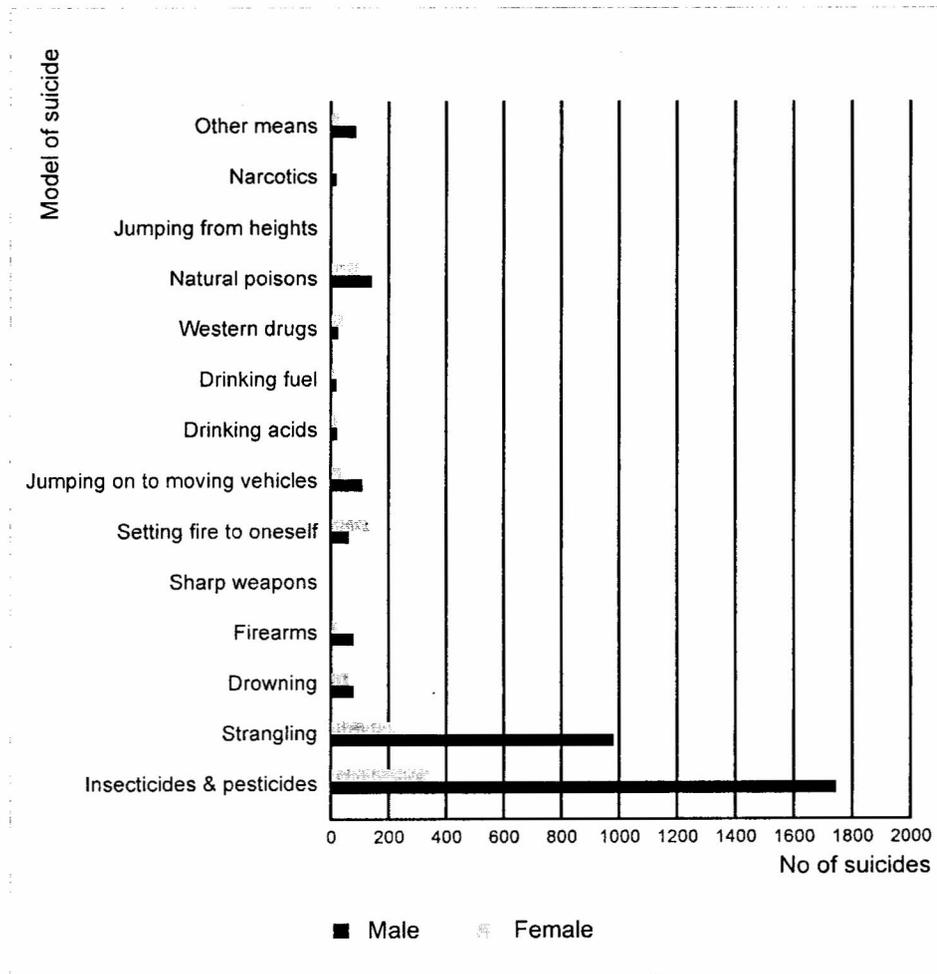
availability or lethality of commonly used suicide methods.

Intentional self poisoning had been a major mode of attempting suicide in the developing world. Pesticides are the most extensively used method associated with high mortality rate; organophosphates were accountable for most of the deaths in rural areas of many developing countries according to Eddleston 2000. These cases were reported in countries such as Chile, China, Ethiopia, India, South Africa, Israel, Kenya, Sri Lanka, Taiwan and Zimbabwe (cited in Perera, 2005)

Sri Lanka significantly differed from UK, by pesticides being the main responsible agent (Senanayaka, *et al.* 1986). However when looking at the changing trends both Western countries and Sri Lanka (Eddleston and Phillips 2004; Ministry of Healthcare and Nutrition, Sri Lanka, 2008) have transformed from violent methods to self poisoning which is a striking similarity.

In Sri Lanka availability of substances determined the poison used in deliberate self harm which had been clearly indicated by subsequent studies. For the same reason eventhough Sri Lanka is a small island, a marked geographical variation is found on the substance used within the country. Drugs and domestic substances were commonly used in the capital whereas agrochemicals are used in the rural areas. Dissanayaka and de Silva, in 1974 showed the use of a wider spectrum of poisons and drugs with relatively non lethal poisons accounting for 35% of poisonous substances in Colombo. Data from the Colombo South General Hospital for the year 1991 indicated that 28.9% of suicides were due to therapeutic agents, 20.6% due to rodenticides and 29.9% due to agrochemicals (Samarasinghe 1991). Abeysinghe 1992 has stated that over 80% of all poisoning in hospitals in an agricultural district, was due to pesticides. In 1993, in a study conducted at General Hospital Colombo, a variety of substances found in urban households such as therapeutic agents, agrochemicals, insecticides and rodenticides, skin care products and detergents were found to be common methods of self harm (Kathriarachchi, 1996). Furthermore poisoning due to deliberate consumption of yellow oleander (*Thevetia peruviana*) is commonly seen in the north, north-central and eastern parts of Sri Lanka (Ganeshamoorthy, 1985; Perera, 2005).

Graph 1: Model of suicide in Sri Lanka in 2007



Source: Department of Police 2007

The most recent data available on suicide in Sri Lanka is for the year 2007. This shows that pesticides continue to be the most common mode of suicide. It is also noteworthy that violent methods too, are still employed though to a much lesser extent.

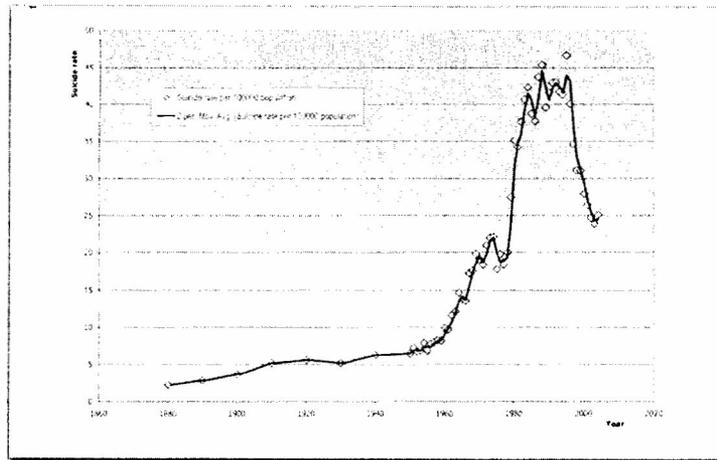
Suicide rates

The suicide rate of Sri Lanka for the year 1950 was 6.5 per 100,000 population (WHO Mortality Data base). By 1995 this had increased by 8-fold to a peak of 47 per 100,000 (Gunnell, *et al.*, 2007). This value had halved by 2005 (Gunnell, *et al.* 2007). The reduction in suicide rates coincided with the restriction on the import and sale of WHO Class I toxicity pesticides in 1995 and endosulfan in 1998 (Gunnell, *et al.*, 2007). Department of Agriculture has attempted to phase out very toxic agrochemicals and encouraged the use of integrated pest management (de Silva, 2003). Presidential Task Force established in 1997 released a policy document on suicide prevention. The act of suicide was decriminalized and this law was implemented in 1998. Introduction of a life skills programme by the Department of Education in 1998 for school children might have contributed to the reduction of suicides in this period. Other factors which helped in reduction of suicide rates in the country include establishment of National Poisons Information Centre at the National Hospital Colombo in 1991 and formulation of guidelines on assessment of deliberate self harm patients admitted to hospitals in 2002 (Kathriarachchi and Manawadu, 2002). Medical schools of the country included assessment of deliberate self harm in their curricula, and several programmes to train stake holders were initiated. However there was no association between the decline in suicide with unemployment, alcohol misuse, divorce, pesticide use or the civil war.

The case fatality rate in Sri Lanka is extremely high. Altogether 12.7% of patients admitted to Anuradhapura Hospital after self poisoning die, compared with 1-2% in the United Kingdom. The rate in men who have drunk organophosphate poisons reaches 60% during some months. The reasons for this high mortality probably include the toxic nature of the substances involved, lack of antidotes, long distances between hospitals, and overstretched medical staff (Eddleston, *et al.*, 1998).

The global situation indicates that suicide rates tend to increase with age. In Sri Lanka during 1965-1980, suicide rates were rising, especially for the younger age groups (Williams, *et al.* 1994). The youth made a major contribution to the suicide rate, in 1980, where 45% of all suicides were in the 15 - 25 age group (Abeyasinghe, 1987). However current data shows that the total suicide rate has declined to 18.5% in this age group. In the year 2007, the peak age group for male suicides is 46-50 years and 21-25 years in females. These rates rise again in the over 70 age group (Sri Lanka Police Service, 2008).

Graph 2: Suicide rates 1940 - 2005



Source-Ministry of Healthcare and Nutrition, Sri Lanka 2008

Conclusion

The literature on suicide in the historical era and the time before the British rule in Sri Lanka is scanty and available only on prominent people. The establishment of the Police Department during the British rule and the enactment of births and deaths registration have enabled reporting of suicides with greater accuracy which are comparable with developed nations. During the latter part of the 20th century and 1st decade of the new millennium enthusiasm of scientists from medical and sociological disciplines have shed more light in to the evidence base.

Suicide rates were well below 10 per 100,000 till 1950 and hanging and drowning were the common methods. Poisoning as a method of self harm emerged after 1950. During the period from 1950 to 1995 the suicide rate has rapidly increased by eight fold to 47 per 100,000 population and correlates with the increase of freely available pesticides and is also paralleled by significant changes in the social and economic situations of vulnerable populations. In Mahaweli resettlement areas removal of social support had been a cause of increased suicide. A wide range of methods were used during the period from 1950 to 2008 which correlates well with the availability of methods. Pesticides remained as the main cause of death due to self poisoning in rural and agricultural areas, natural plants like yellow oleander in northern part of the country while in more urban areas household substances as well as therapeutic substances were used. In this regard Sri Lanka parallels the western trend as poisoning replaced more violent methods of self harm, whilst the main

difference being that psychotropic drugs were the most common method in the West, while pesticides were the most frequent method in Sri Lanka.

The decline in rates since 1995 could be due to population based interventions such as establishment of the Presidential Task Force in 1997 which released a policy document on suicide prevention. In 1998, decriminalizing the act of suicide was implemented and Department of Education initiated a life skills programme. Parallel with this the Department of Agriculture has attempted to phase out very toxic agrochemicals and has encouraged integrated pest management. In secondary prevention, guidelines on deliberate self harm assessment of patients admitted to hospitals were developed in 2002. Several programmes were launched to help those who deliberately harm themselves.

The contribution to suicide rate in 1980 was 45% between the 15 - 25 age group, which declined to 18.5% in 2007. The preponderance of youth suicide, has remained same for females whereas in males this age has risen to 46 - 50 years. These rates rise again in the over 70 years age group.

Comprehensive research is required in this area of suicide and deliberate self harm in Sri Lanka to understand the causes, impact, management and prevention of this tragedy.

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