

ORIGINAL ARTICLE

Suicide deaths in dammam, kingdom of Saudi Arabia: Retrospective study

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Abstract A retrospective study was carried out on 126 suicide cases autopsied at the Forensic Medicine Center in Dammam, Kingdom of Saudi Arabia, from 2000 to 2003.

Of these 126 cases, 109 (86.5%) were males and 17 (13.49%) were females, and the ratio of the males to females was 6.4:1 with the highest ratio in 2000 (10:1). Around 88% of the studied subjects were in their third or fourth decades.

The largest percentage of suicides were among non-Saudis, and the highest is the Indian population with 54 cases (42.85%), followed by Saudi nationals (15.07%) and then ten other nationalities. Suicide by hanging was the most common method (89.68%), followed by firearms in only eight individuals (5.55%) and other four methods of suicide.

Family troubles were documented in 5.5% of cases. While a history of psychological illnesses was more than double this figure, 13.49%. Suicide notes were discovered at the scene of death in five cases. Postmortem blood alcohol was found in only 5.55% of cases, and toxicological analysis resulted in the detection of amphetamine and cannabinoids in 3.69% and 1.587% of them, respectively.

There was an unstable curve in suicide rate in Dammam; in 2000 there were 33 cases, with fewer in 2001, more in 2002, and the fewest in 2003.

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1. Introduction

Suicide is one of the major manners of death worldwide and an important public health problem, and it is the third leading cause of death among young people in the United States.²

Suicide is defined as the deliberate ending of one's own life.^{3,4} Suicide rates vary depending on region, culture, age, and sex. The average worldwide rate for all suicides was estimated to be 14.5/100,000 in 2000.⁵ The highest suicide rates were reported in the low- and middle-income countries of Europe. The suicide rate for males was reported to be 46.8/100,000, and the highest rates for women were reported in the low- and middle-income countries of the Western Pacific region, where the adult suicide rate remained steady at around 23/100,000. The lowest rates reported for men were in the high-income countries of the Eastern Mediterranean (4.1/100,000), and for women, the rate was lowest in the high-income countries of the Eastern Mediterranean (2.1/100,000) and the low- and

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middle-income countries of the Americas (2.7/100,000).⁶⁻⁹ In contrast, the average suicide rate across Saudi Arabia was 1.1/100,000 people per year.¹⁰

In Islamic countries such as the KSA, the definitive Islamic law according to *Shari'ah* doctrine, suicide is forbidden. It is considered to be a criminal act against oneself.¹² The aim of this study is to study the trends of suicide in Dammam in relation to age, gender, nationality, and other factors such as psychological problems.

2. Methodology

According to the guidelines for forensic medicine practice in KSA, all suicide deaths must be examined by medicolegal experts before an official death certificate is issued. The medicolegal examination, whether external examination or forensic autopsy, is carried out by two forensic medical examiners, cooperating with forensic toxicologists and forensic histopathologists in their corresponding laboratories.¹²

A total of 126 suicide cases were autopsied at the Forensic Medicine Center in Dammam from January 2000 to December 2003. Cases were determined to be suicides according to information derived from scene investigations, the general prosecutor's investigations, external examination, autopsy findings, and toxicological analysis. The data were examined with respect to their personal data (gender, age, occupation, nationality, history of previous psychological illnesses or previous suicide attempts, and toxicological tests).

3. Results

One hundred and nine cases (86.507%) were males and 17 (13.492%) were females, and the ratio of the males to females was 6.4:1, with the highest ratio in 2000 (10:1). Approximately 88% of the studied subjects were in their third and fourth decades. The distribution of cases with respect to gender is shown in Table 1.

Chart 1 shows that the highest percentage of suicide occurred in 2002 (29.36%) and the lowest in 2003 (21.42%). There was no stable trend for suicide in Dammam.

Nearly 88% of suicide cases were in the third, fourth, and fifth decades of life (111 cases), and the highest number was in the fourth decade (67 cases). More than two-thirds of the females in the current study (76.47%) were in their fourth decade (13 cases). There was no case under 10 years of age, and the number of the cases in the second-decade group was the lowest (1 case), followed by the seventh-decade group (2 cases), as shown in Table 2.

Table 1 Distribution of suicide in the study by gender each year.

Year	Gender		Ratio	Total			
	Males			Females			
	N	%		N	%		
2000	30	23.8	3	2.38	10:1	33	26.19
2001	26	20.63	3	2.38	8.6:1	29	23.01
2002	32	25.39	5	3.96	6.4:1	37	29.36
2003	21	16.66	6	4.76	3.5:1	27	21.42
Total	109	86.5	17	13.49	6.4:1	126	100

Foreigners working in the Kingdom represented the highest percentage of suicide cases (84.92%), with the greater part comprising Indians (42.857%), representing 54 cases, followed by Saudi nationals (15.079%), Nepalese (8.730%), Bangladeshis (7.142%), Filipinos (7.142%), Indonesians (6.349%), Sri-Lankans (4.761%), Pakistanis (3.174%), and one case of unknown nationality; four other nationalities comprised only 3.968% of cases, each with only one case: Yemeni, Sudanese, British, and Afghani.

Suicide by hanging was the most common method in the majority of cases (113 cases, 89.682%), and most of them (100 cases, 79.365%) were in their third, fourth, or fifth decades. It was the method of choice in nearly 90.825% of studied males (99 cases) and about 82.352% of the studied females (14 cases) (see Table 3 and Chart 2).

The hanging method was followed by firearm deaths in only seven cases (5.555%); six of them were males and one female, and the other four methods of suicide were as follows in a descending order: falling from a height (2 cases, 1.587% with a female to male ratio of 1:1), poisoning (2 cases, 1.587% with a female to male ratio of 1:1), in addition to one individual (0.793%) who committed suicide by cutting the throat and another by drowning.

Family troubles were documented in 7 cases (5.5%), while a history of psychological illnesses was given in 17 cases (13.49%). A history of other issues such as financial issues, work-related problems, recent arrival in the country, and chronic illness was documented in 11 cases (8.73%), and there was only one case of suicide in custody. In four cases, there was a history of previous suicide attempts.

The peak of total suicidal acts occurred in June (18 cases, 14.285%) with a male to female ratio of 5:1, while the lowest number occurred in December (4 cases), all were males, as shown in Table 4. There was a predominance of single females with their peak in March and a female to male ratio of 2.75:1, as shown in Chart 3.

Regarding other medicolegal investigations, suicide notes were discovered at the scene of death in five cases (3.96%). Postmortem blood toxicology was positive for alcohol in only 5.555% of cases, and 3.96% of cases were positive for amphetamine, while cannabinoids were found in 1.587% of the cases.

4. Discussion

Suicide rates and various epidemiological data on suicides have become a major issue in many countries.¹³ Every year, there are cases of suicide that involve every ethnic group and different age groups. Different ethnic groups and age groups show different patterns in the ways or methods that they use in committing suicide. There are several methods of committing suicide, such as hanging, which is the most common method, jumping from a height, poisoning, cutting one's wrist or throat, burning, inhaling exhaust fumes, drowning, and so on.¹⁴

Among the prominent indicators are previous suicide attempt(s); a history of mental disorders, especially depression; economic crisis; a history of alcohol and substance abuse; a family history of suicide¹⁵; a family history of child maltreatment¹⁶; feelings of hopelessness; impulsive or aggressive tendencies; barriers to accessing mental health treatment; loss (relational, social, work, or financial); physical illness; easy access to lethal methods¹⁷; unwillingness to seek help because of

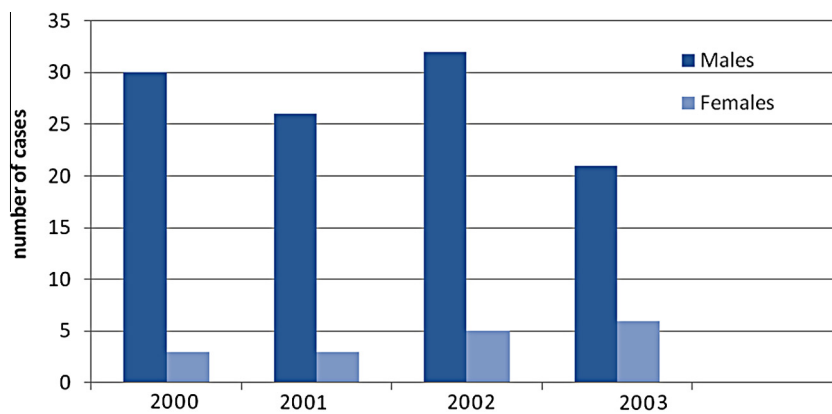


Chart 1 Distribution of the yearly suicide cases.

Table 2 Distribution of suicide cases by gender and age group.

Age group	Gender		Total	%
	Males	Females		
10–19	1	–	1	0.79
20–29	20	2	22	17.46
30–39	54	13	67	53.17
40–49	20	2	22	17.46
50–59	12	–	12	9.52
60–69	0	0	0	0
≥70	2	–	2	1.587
Total	109	17	126	100

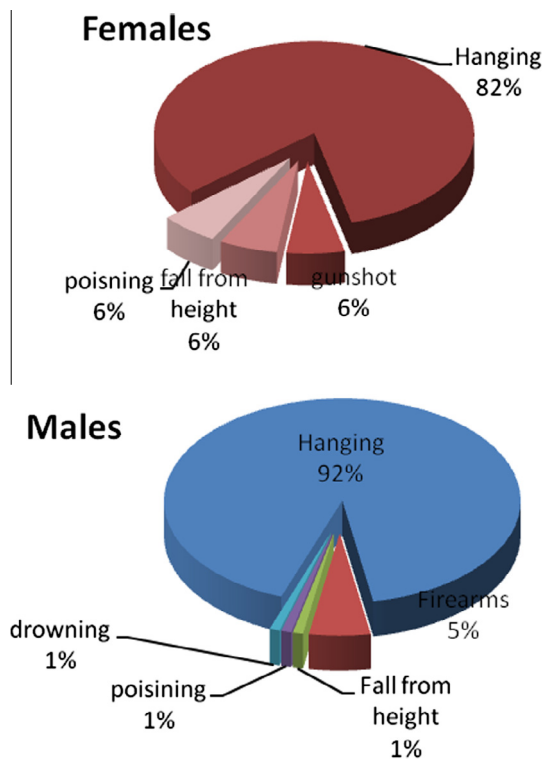


Chart 2 Gender and method of suicide.

Table 3 Distribution of studied cases by gender and method of suicide.

Method of suicide	Gender		Ratio	Total	%
	Males	Females			
Hanging	99	14	7.071	113	89.682
Firearms	6	1	6	7	5.55
Fall from a height	1	1	1	2	1.587
Poisoning	1	1	1	2	1.587
Cut throat	1	0	–	1	0.793
Drowning	1	0	–	1	0.793
Total	109	17	6.411	160	100

the stigma attached to mental health and substance abuse disorders or suicidal thoughts; cultural and religious beliefs, such as the belief that suicide is a noble resolution for a personal dilemma; local epidemics of suicide; and isolation.¹⁸ In the current study, documented family or psychological troubles were noted in only 5.5% and 13.49% of cases, respectively. We believe that these figures are influenced by poor information collected from the deceased’s coworkers due to their fear of getting involved in the death investigations, taking into consideration that most of them are foreigners. In addition, nationals may refuse to give such information as well, and they go to court to prevent further medicolegal investigations by the prosecutor and police departments.

Saudis (Muslims) constitute about 65% of the population in Dammam¹ but only 15.07% of the suicide cases, whereas

Indians constituted the largest group among suicide cases (54 cases, 42.857%), followed by 15 other nationalities. This could be attributed to religious prohibitions or because of the presence of multiple ethnic groups in the Kingdom and especially in Dammam, which hosts many foreign workers. Most religious laws discourage suicide.¹⁹

Hanging is a leading method of suicide in many countries, including Germany and Japan, and it is the second-leading suicide method after intoxication in India.^{20–22} In the U.S., despite the fact that the suicide patterns differ by state, hanging was reported to be the second most common method of suicide after firearms in general.²³ This is in agreement with the findings of the current study, as hanging cases constituted the majority of all suicides in the city (overall percentage: 89.682%); most of them were in their third and fourth decades.

Table 4 Distribution of suicide cases by gender and month during the period of the study (2000–2003).

Month	Gender		Ratio	Total	%
	Males	Females			
January	6	2	3	8	6.349
February	8	0		8	6.349
March	11	4	2.75	15	11.904
April	6	0		6	4.761
May	7	1	7	8	6.349
June	15	3	5	18	14.285
July	10	1	10	11	8.730
August	8	1	8	9	7.142
September	6	2	3	8	6.349
October	15	2	7.5	17	13.492
November	13	1	13	14	11.11
December	4	0		4	3.174
Total	109	17		126	100

It was the method of choice in nearly 92% of the studied males and 82% of the studied females. This percentage is much higher than in a previous study in Dammam, which revealed that suicide by hanging represented 63% of all suicide cases, followed by jumping from a height (12%) and other means of suicide.²⁴ In the present study, firearms, falling from a height, and poisoning were the next most common methods, at 5.55%, 1.58%, and 1.58%, respectively. This was in contrast to much higher percentages and different methods in another study in which falling from a height and poisoning were the next most common methods after hanging, at 34% and 15%, respectively.²⁴

The rates found in this study are similar each year and close to the suicide rate in Saudi Arabia found by a previous study (1.1/100,000 people) in a 10-year study period from 1986 to 1995.¹⁰ On the other hand, the findings are in contrast to those of studies carried out in Turkey and Northern Ireland, which showed an increase in the overall rate of suicide and in the number of suicidal hanging fatalities with the annual increase in population.^{25,26}

The gender ratio (male to female) in the overall period of the study was 6.4. It was the highest (10:1) in 2000. These

rates are different from the global rates, much higher than in another study performed in the main Turkish city of Istanbul, which reported a male to female ratio of 2.39,²⁶ and another study done in South India with a male to female ratio of 2:1.²⁷

The present study revealed that the highest number of victims were in their fourth decade (53.17%). These results were in contrast to those of other studies in Malaysia²⁴ and Turkey²⁵ and South India²⁷ revealing that the third decade had the maximum number of suicide cases.

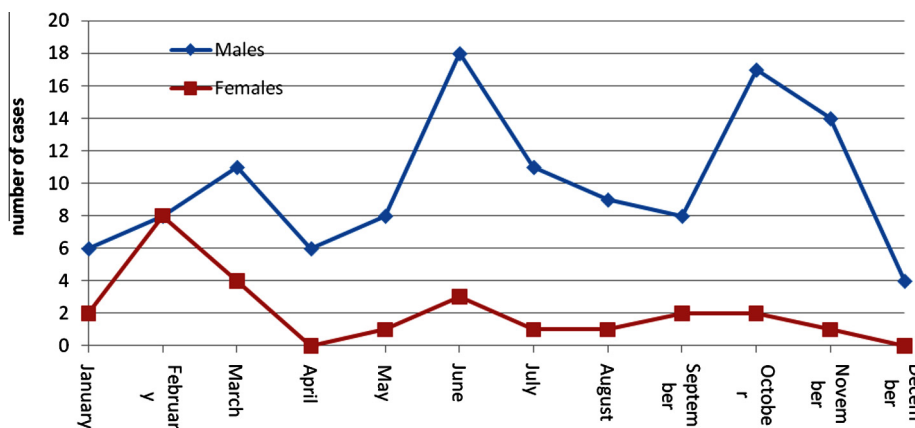
While suicide notes are one of the markers of suicide and are said to provide a valuable insight into the thinking of suicide victims before the fatal act,²⁸ notes were found in only five of the studied cases, 3.96%. This percentage is much smaller than that found in a Japanese study (30%),²⁹ and a British study (43%).³⁰ The authors of the British study affirmed that those who died by more violent means, such as hanging, appeared less likely to leave a suicide note.

Ethyl alcohol was detected in the blood of nine cases (5.55%) in the present study. Around twice this figure (11.9%) was found in a Turkish study in Istanbul.²⁵ This difference can be explained by religious and cultural background because alcohol beverage trading, manufacturing, and consumption are prohibited in the Kingdom of Saudi Arabia, and severe penalties against abusers and traders are carried out under the law. Similar results were found in the Turkish study for other substances (amphetamine in 3.96% and cannabinoids in 1.587% of cases).

5. Conclusion and recommendations

There was an irregular rate in the number of suicide fatalities across the studied four-year period. However, it is still considered a public health problem and should be given a high priority with regard to prevention and more research on the social and life circumstances of these groups, focusing on both nationals and foreigners. We encourage further studies regarding psychological and other causes of suicide in the region.

We support previous studies that suggest that testing the psychological acceptability of committing suicide, especially in laborers and housemaids in the Kingdom, should be performed before employment.

**Chart 3** Distribution of the monthly suicide cases.

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