Suicide in the Islamic Republic of Iran: an integrated analysis from 1981 to 2007

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الانتحار في جمهورية إيران الإسلامية: تحليل تَكَامُلي من عام 1981 حتى 2007

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الخلاصة: على الرغم من أن معدّل الانتحار منخفض في البلدان الإسلامية، فإن ثـَمَّةَ بيِّنات على أنه آخذ في الازدياد. وقد أُجري تحليل تَكَامُلي لمعطيات محاولات الانتحار (المميتة وغير المميتة) من الدراسات التي تمَّت في جمهورية إيران الإسلامية من عام 1981 حتى 2007. ومن بين أربع وخمسين دراسة منشورة تتعلق بالانتحار، كانت ثمان وأربعون دراسة منها مؤهَّلةً لمعايير الإدراج في الدراسة (التي غَطَّتْ 768 26 محاولة للانتحار). وكان المتوسط الـمُوَزَّن لمعدّل محاولات الانتحار هو 26.5 بكل مئة ألف، ووسطي معدّل الوفيات بالانتحار 6.7 بكل مئة ألف. ومتوسط عمر الذين حاولوا الانتحار 25 سنة؛ وكان منهم في المتوسط 41.8٪ من الذكور، و50.5٪ عازبين، وكان 70.0٪ من سُكّان المدن. ولم تنجح غالبية محاولات الانتحار: وقد أقْدَمَ عليها في المتوسط 54.2٪ من ربَّات البيوت المتزوجات، و25.5٪ من الطلبة، و21.0٪ من الرجال العاطلين عن العمل. وأظهرت السوابق الطبية أن 16.2٪ من الذين حاولوا الانتحار كان لديهم سوابق عجز، وأن 42.0٪ منهم كان لديهم سوابق إصابة بالاضطرابات النفسية. وقد قورنت هذه المعدّلات مع دراسات على مجموعات من الأمم ومن الأديان الأخرى.

ABSTRACT Although the rate of suicide is low in Muslim countries, there is evidence that it is increasing. An integrated analysis was made of data on suicide attempts (nonfatal and fatal) from studies carried out in the Islamic Republic of Iran from 1981 to 2007. Of 54 published studies concerning suicide, 48 (covering 26 768 cases of attempted suicide) satisfied the inclusion criteria. The weighted mean rate of suicide attempts was 26.5 per 100 000 and the average rate of death by suicide was 6.7 per 100 000. The mean age of suicide attempters was 25 years; on average 41.8% were male, 50.5% single and 70.0% from urban areas. Most suicide attempters were not working: 54.2% on average were housewives, 24.5% students and 21.0% unemployed men. Medical history showed that 16.2% of suicide attempters had a history of disability and 42.0% had a history of psychological disorders. The rates were compared with studies from other nations/religious groups.

Suicides en République islamique d'Iran : une analyse intégrée de 1981 à 2007

RÉSUMÉ Même si le taux de suicide est faible dans les pays musulmans, des données indiquent que celui-ci est en hausse. Une analyse intégrée a été menée sur des données de tentatives de suicide (mortelles ou non) extraites d'études menées en République islamique d'Iran entre 1981 et 2007. Sur 54 études publiées sur le sujet, 48 d'entre elles, couvrant 26 768 cas de tentatives de suicide, correspondaient aux critères d'inclusion. Le taux moyen pondéré de tentatives de suicide était de 26,5 pour 100 000 et le taux moyen de décès par suicide était de 6,7 pour 100 000. L'âge moyen des personnes ayant fait une tentative de suicide était de 25 ans ; 41,8 % de ces personnes en moyenne étaient de sexe masculin ; 50,5 % étaient célibataires et 70,0 % vivaient en milieu urbain. La majorité d'entre elles ne travaillaient pas : parmi elles, 54,2 % en moyenne étaient des femmes au foyer, 24,5 % des étudiants et 21,0 % des hommes sans emploi. Les dossiers médicaux ont permis de révéler que 16,2 % des personnes ayant tenté de se suicider avaient des antécédents d'incapacité et 42,0 % des antécédents de troubles psychologiques. Les taux ont été comparés aux résultats d'études d'autres pays ou de différents groupes religieux.

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Introduction

Suicide is a growing problem worldwide [1,2]. According to World Health Organization estimates, approximately 850 000 suicides leading to death occurred throughout the world in the year 2000 [3]. It has been estimated than in 2020 about 1 530 000 people will attempt suicide [3,4]. Although the rate of suicide is low in most Muslim countries [3,5], there is evidence that it is increasing [6].

Suicide and attempted suicide have been occurring throughout human history and studies of suicide epidemiology have an important role in assessing the psychological health of a society [7]. According to a report by the American Psychiatric Society suicide is the second most common cause of death among students, the third cause of death of young people between the ages 15–24 years and the sixth cause of death of children below 15 years of age. Among these younger age groups of the population, suicide is the second cause of death after accidents [8–10]. Methods of attempting suicide vary across different countries, perhaps reflecting different lifestyles, cultures and religions [1]. The objective of this study was to integrate and analyse the data on suicide attempts from all studies carried out in the Islamic Republic of Iran from 1981 to 2007.

Methods

An integrated-analysis method was used. This technique combines information from various studies so that the number of people investigated increases and thus the power of the analysis and the precision of estimates will increase [11].

All published studies in English or Farsi languages concerning suicide attempts (nonfatal and fatal) in the Islamic Republic of Iran from 1981 to 2007 were considered. The main Internet search engines and resources used to find studies were: SID (the Iranian Scientific Information Database), IranMedex (index of articles published in Iranian biomedical journals), MagIran (the Scientific Magazines Bank of Iran), PubMed (database of United States National Library of Medicine) and databases of the World Health Organization Regional Office for the Eastern Mediterranean Region. The scientific research journals of the Iranian medical universities of were also searched. The research keywords used were suicide, self-burning, self-beating and poisoning.

The criterion for selection for this analysis was that the study had sufficient reliability in data collection methods and sources and methods of analysis. The scientific reliability of the articles was assessed by a third person who had good knowledge of the subject but was blind to the names of the authors and the journal. Out of 54 available studies, 48 were selected, which included data on 26 768 cases of attempted suicide [12–59].

The data presented in these studies were extracted, recorded in a table which was prepared for this purpose and analysed using *SPSS*, version 17, and *Excel*, version 2003, software. The summary indices were calculated as weighted average of indices in each study based on the number of suicide attempt cases in each study using the fixed effects model.

Results

Aggregated rates of suicide and suicide attempt

As Table 1 shows, for the 7 studies in which data were available, the weighted mean rate of suicide attempts was 26.5 per 100 000 population and the average rate of death by suicide was 6.7 per 100 000.

Demographic characteristics

The demographic characteristics of the people attempting suicide are given in Table 2. Data on age, sex and marital status were available in 30 out of the 48 studies. The aggregated mean age (standard deviation) of suicide attempters was 25 (SD 3.6) years. The weighted mean proportion of males was 41.8%. On average 50.5% of suicide attempters were single (never married).

Data on residence, employment, education and economic status were available in fewer studies (Table 2). On average, 70.0% of suicide attempts took place in an urban area. The rate of suicide attempts among those with educational level up to 12 years was 30.3% and this rate was higher than among those who had were illiterate (17.2%) and or had 12 or more years of education (10.8%). Most suicide attempters were not working: employment status showed that 54.0% were housewives, 24.5% were students and 21.5% were unemployed men. Economic status, reported in 12 studies, showed that suicide attempts were more common

Table 1 Rate of attempted suicide (nonfatal and fatal) based on an integrated analysis of studies carried out in the Islamic Republic of Iran

Attempted suicide	No. of studies analysed	No. of cases	Rate per 100 000 population			
			Weighted mean (SD)	95% CI	Min.	Max.
Nonfatal	7	6575	26.5 (2.7)	21.1–32.2	0	35
Fatal	7	6575	6.7 (1.9)	3.4–8.6	1	12

SD = standard deviation; CI = confidence interval.

Table 2 Demographic characteristics of suicide attempters based on an integrated analysis of studies carried out in the Islamic Republic of Iran

Characteristic	No. of studies analysed	No. of cases	Weighted mean (SD)	95% CI	Min.	Max.	Median
Age (mean years)	14	85 231	25.0 (3.6)	17.5–32.3	18	37	25
Sex (% of cases)	30	18 956					
Male			41.8 (3.2)	35.4–48.2	12	61	39.5
Female			58.2 (5.4)	47.4–60.0	29	68	59.5
Marital status (%)	30	18 956					
Single[a]			50.5 (4.1)	47.6–58.9	17	77	51
Married			45.6 (5.2)	35.4–55.6	12	69	47
Divorced			3.9 (0.8)	2.2–5.5	0.3	14	3.5
Residence (%)	13	7 543					
Urban			70.0 (6.4)	63.5–82.8	10	90.1	–
Rural			30.0 (3.4)	23.5–36.8	47	48	29
Education (%)	22	16 543					
Illiterate			17.2 (2.8)	22.9–14.8	2	33	19.5
High school (< 12 years)			30.3 (3.7)	22.6–37.7	0	45	30.4
University (≥ 12 years)			10.8 (2.3)	6.3–14.6	0	21	11
Economic status (%)	12	67 553					
Low			62.0 (4.9)	51.8–72.1	3.7	86	65
Moderate			10.0 (3.1)	3.6–16.2	3.4	25	9.4
High			28.0 (3.5)	21.4–35.6	23	44	27
Occupation (%)							
Housewife	12	85 431	54.0 (4.7)	43.8–63.5	2	79	55
Unemployed	18	17 361	21.5 (2.1)	16.7–25.6	15.7	39	20
Student	18	17 361	24.5 (3.3)	18.1–31.3	5.2	43	25

[a]Never married.
SD = standard deviation; CI = confidence interval.

in those with low income (62.0%) than those with high (28.0%) or moderate (10.0%) levels of income.

Medical history and reasons for suicide attempts

Medical history, when available in the studies, showed that 16.2% of suicide attempters had a history of physical disorder and 42.0% had a history of mental disorder (32.6% had a history of depression and 23.8% had a history of addiction) (Table 3).

On average, 24.8% of cases had made one or more previous suicide attempt. One-third of suicide attempters (32.0%) had warned about their action beforehand. The most prevalent reasons for suicide attempt were family difficulties (49.5%), emotional/relationship problems (17.5%) and employment/education problems (14.5%).

The rate of suicide attempts was higher in summer (35.2%) than other seasons.

Suicide methods

Drugs were the most common method of attempting suicide (65.0%). Self-burning and poisoning were the second and third most common methods (15.0% and 12.0% respectively) (Table 3). The rate of hanging was 9.1% and of suicide with firearms was 6.0%.

Discussion

In this integrated analysis of 24 256 attempted suicide cases in 48 studies the aggregated suicide rate in the Islamic Republic of Iran (6.7 per 100 000) was lower than in India (9.6 per 100 000), Christian-majority countries (11.2 per 100 000) and Buddhist countries (17.9 per 100 000) [1]. It was higher than in Muslim-majority countries (1 per 100 000) [1] but lower than Turkey (7.8 per 100 000) [5]. The stigma of suicide in the religious context of Iranian society and the risk of subsequent legal problems for their family (e.g. burying the deceased) may mean that suicide is under-reported in the Islamic Republic of Iran.

The present analysis found that Iranian women attempted suicide 1.39 times more than men. This also agrees with studies in other countries; in European countries, for example,

Table 3 Reasons and methods of attempted suicide and medical history of suicide attempters based on an integrated analysis of studies carried out in the Islamic Republic of Iran

Variable	No. of studies analysed	No. of cases	% of cases				
			Weighted mean (SD)	95% CI	Min.	Max.	Median
Suicide history							
Warning before attempting suicide	10	5 834	32.0 (2.5)	27.1–37.1	20.7	40	29.7
Previous suicide attempt	17	19 876	24.8 (2.3)	13.8–29.7	3	37	20
Method							
Drugs	21	15 783	65.0 (2.6)	55.3–60.5	41	88.5	67
Poisoning	17	12 346	12.0 (3.1)	5.1–18.8	6	30	13
Self-burning	10	9 783	15.0 (4.6)	6.2–24.3	2.5	32	12
Hanging	10	7 673	9.1 (2.3)	4.7–13.4	0.5	18	8
Gunshot	6	4 782	6.0 (2.9)	0.2–11.4	0.5	10	10
Other	4	2 158	1.3 (1.9	0–4.5	–	–	–
Reason							
Family difficulties	21	19 431	49.5 (2.8)	43.2–45.4	30	76	52
Relationship/emotional problems	17	12 371	17.5 (2.1)	12.2–21.7	5	29.2	16.5
Employment/education problems	17	16 731	14.5 (2.1)	10.1–18.9	0.5	27	13
Other	17	5 423	2.1 (18.5)	14.1–22.9	–	–	–
Medical history							
Mental disorder	22	21 789	42.0 (2.5)	36.8–47.4	9.6	52	39.6
Physical disorder	22	19 789	16.2 (1.3)	13.7–18.9	1	38	16
Substance dependence	12	9 187	23.8 (2.4)	19.0–29.6	7.2	35	23.2
Depression	17	18 731	32.6 (3.4)	28.3–39.4	9	47	27
Season	10	8 567					
Spring			22.7 (3.2)	13.9–29.1	19.3	26	–
Summer			35.2 (2.0)	31.2–40.4	28.6	54	–
Autumn			21.5 (1.5)	18.6–24.9	20	33	–
Winter			20.5 (2.3)	15.2–25.7	19.1	24.7	–

SD = standard deviation; CI = confidence interval.

women attempt suicide 1.5 times more than men [9]. In our analysis, there similar rates of suicide attempts among single and married people (50.5% and 45.6%), although other studies have found marriage to be a preventive factor in attempted suicide [1–5,9,10,60]. The most common age of suicide in Islamic Republic of Iran was among youth, as the average age was 25 years. This is similar to reports from most other countries [1–11,60]. Pritchard and Amanulah in an analysis of suicide in 17 predominantly Islamic countries contrasted with the UK concluded that suicide rates were higher for males than females, and older (65+ years) than younger (15–34 years) ages in every country reviewed [61]. The rate for males in the Middle East was 0–36 per million, South Asia 0–12 per million, Europe 53–177 per million and former USSR 30–506 per million, with 3 countries exceeding the UK rate of 116 per million. Suicide rates in Islamic varied widely and the authors concluded that the high rates of "other violent deaths" (ICD-9 category), especially in Middle Eastern countries, may be a repository for hiding culturally unacceptable suicides [61].

The rate of suicide attempts in this analysis was higher among those with high school education than those with no education and those with university level education. As for occupation, the highest rate of suicide attempts was among unemployed men and housewives. Of course, unemployment is linked to other social factors such as low literacy and financial problems. In New Zealand, unemployed men are 2 or 3 times at greater risk of attempting suicide than employed men [1,4,60]. Most suicide attempters in the Islamic Republic of Iran had low income, while in developed countries, suicide

was more common in upper socioeconomic groups of society [2,4]. Qin et al. in a study of Denmark concluded that unemployment and low income had stronger effects on suicide in male subjects; living in an urban area was associated with higher suicide risk in female subjects and a lower risk in male subjects; and a family history of suicide raised suicide risk slightly more in female than in male subjects [62].

The most common reasons for attempting suicide were family difficulties, relationship/emotional and employment/education problems. This agrees with data from developing countries [1,4,5]. Considering the psychological and social stresses of youth and their perceived inability to solve their emotional problems and deal with life stressors, there is an important role for better life skills training and psychological support at home, school and university [4,8].

The highest suicide rate in the Islamic Republic of Iran was in summer (35.2%), nearly 13% higher than the other seasons, although these results do not agree with the findings from other countries [1]. A study in Finland found a strong seasonal effect on suicide occurrence, with the risk of suicide being greatest in spring [63]. The seasonal effect was most pronounced when the number of suicides was relatively low.

Suicide attempts in urban areas in the Islamic Republic of Iran were higher than in rural areas, which may be due to the greater stress imposed by urban lifestyles. This finding is similar to data reported from other countries [1,8]. More research is needed into reasons for higher rates of suicide in specific areas in order to plan interventions. For example, studies from Ilam province, near the border with Iraq, showed that it had the highest rate of suicide in Islamic Republic of Iran [53,59] and suggests that this region needs more attention on suicide prevention than other regions of the country .

As reported elsewhere [4], drugs were the most common method of suicide attempts in the Islamic Republic of Iran, which may be due to the ease of use and accessibility of drugs. The second most common suicide method was self-burning. This method is rarely used in developed countries [2,7,8,60]. Cultural differences in attitudes to self-immolation, storage of flammable fluids at home and the use of flammable materials such as kerosene for cooking may explain this difference.

About half of the people who attempted suicide had a history of mental disorders and approximately one-third of them had been diagnosed with depression. These results agree with studies in other countries [1–10,60]. Brent et al. in the United States found that the most significant psychiatric risk factors associated with adolescent suicide were major depression (OR = 27.0), bipolar mixed state (OR = 9.0), substance abuse (OR = 8.5), and conduct disorder (OR = 6.0) [64]. In our survey on average, about one-third of people who attempted suicide had a history of attempted suicide. Brent et al. also found that previous suicide attempts, suicidal ideation and homicidal ideation were associated with suicide among adolescents [64]. According to WHO, instigating mental health services after a person has attempted suicide is effective in reducing the risk of further attempts [3].

Suffering from a chronic physical disease will also increase the risk of suicide [9]. In our analysis, an average of 16.2% of people who attempted suicide had a history of physical disorders. In a study in Denmark 52% of suicide attempters interviewed were found to suffer from a somatic disease, and 21% were on analgesics for pain [65]. Physicians need to be aware of the need not only for physical treatment but also for psychological support for patients with chronic diseases. This advice is reinforced by WHO [3] and is followed in many developed countries.

More targeted support, for example training about life skills, is needed for those at greater risk of suicide, especially young people, to help them to cope with family and emotional difficulties and employment and economic problems. Mental health services need to be aware of the higher risk of suicide among people with depression and those with previous suicide attempts but also people suffering from chronic physical health problems.

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