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ORIGINAL PAPER

Sociodemographic Characteristics and Patterns of Suicide in Pakistan: An Analysis of Current Trends

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Abstract

Suicide is a global phenomenon with about 79% of suicides occurring in low and middle-income countries. This study investigated current trends, demographics, and characteristics of completed suicides based on reports from leading Pakistani Newspapers. This study performed a qualitative analysis of completed suicides in Pakistan's four newspapers from January 1st, 2019, through December 31st, 2020. Data about socio-demographic characteristics, methods of suicide, possible motives, and associated features were analyzed. 2295 suicides were reported in Pakistan during 2019 and 2020. About 61.87% were completed by men, and 38.12% by women. The most suicides occurred in individuals ages < 30 years. The predominant method of suicide in this group was ingestion of poisonous substances. The most commonly reported reasons for suicide were domestic conflicts, financial problems, and failure in love/marriage. By providing insight into characteristics of suicide, this study highlights the need for effective suicide prevention policies and programs to tackle rising rates of suicide in Pakistan.

Keywords Mental health · Suicide · Pakistan · Muslims · Newspaper reports · Low-and middle-income countries

Introduction

Suicide is a global phenomenon resulting in about 800,000 deaths annually, with age-standardized suicide rates of 10.5 per 100,000 (15.0 for men and 8.0 for women) in 2016 (World Health Organization, 2019). About 79% of these suicides occur in low- and middle-income countries, home to 84% of the world's population, highlighting the significant burden of suicide in resource-limited countries (World Health Organization, 2019). The South-East Asia region has the highest suicide rates of any of the World Health Organization (WHO) regions (13.4 per 100,000). (World Health Organization, 2019) An estimated 39% of all suicides in low- and middle-income countries are in Southeast Asia (Ahmed et al., 2017). Furthermore, the decrease in the age-standardized suicide rates between 2010 and 2016 was lower (4.2%) in South-East Asia compared to decrease in the Western Pacific region (19.6%) and globally (9.8%). (World Health Organization, 2019).

Pakistan is the fifth most populous country globally and second-most populous country in South-East Asia, with an estimated population of 207 million. (*Current Population*, n.d.) Pakistan has four provinces; Punjab, Sindh, Baluchistan, and the Khyber Pakhtunkhwa (KPK) and other administrative areas (Gilgit-Baltistan and Azad Jammu and Kashmir—AJK). (*The Official Web Gateway to Pakistan*, n.d.) Federally Administered Tribal Areas were merged with KPK after the last census in 2017 (Noor et al., 2018). According to the provisional census of 2017, Punjab is the largest province and was home to 52.9% of country's population, followed by Sindh (23%), KPK (14.7%), Baluchistan (5.9%), FATA (2.4%), and Islamabad (0.96%) (PROVINCE WISE PROVISIONAL RESULTS OF CENSUS-2017, 2017). The state of mental health in Pakistan is complicated by a plethora of economic, sociocultural, and religious factors, and it is further marred by a limited workforce (Ali & Gul, 2018). The allocation for mental health makes up only 0.04% of Pakistan's total health budget, an estimated $9.31 per capita (Ali & Gul, 2018). Moreover, 12.4% of

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the population in the country lives below the poverty line, with an estimated unemployment rate of 6% (Ali & Gul, 2018).

In addition to sociocultural and religious factors, suicide continues to be significantly under-reported due to medico-legal concerns and the prevalence of a stigma against suicide in Pakistani society (Naveed et al., 2017). Under Pakistan Penal Code 309 of the Criminal Procurement Act, suicide attempts and suicidal behaviors are punishable by imprisonment and/or subject to financial penalty up to PKR 10,000 (Khan, 1998, 2007). Though these individuals rarely face prosecution, they face significant stigma, extortion, and harassment from law enforcement officials and the community at large (Khan, 2007). The Mental Health Act of 2001 has made some progress, however, this is yet to translate into clinical practice[1]. This legislation states that "a person who attempts suicide shall be assessed by an approved psychiatrist and if found to be suffering from a mental disorder shall be treated appropriately under the provisions of this Ordinance" (Shekhani et al., 2018).

The lack of official epidemiological data from Pakistan and criminalization of suicide also impairs the ability to understand the magnitude of the problem and then formulate targeted interventions (Al-Harrasi et al., 2016). Currently, Pakistan does not report mortality data on suicide to the WHO, and no annual mortality rates are measured. As a result, research on suicide especially completed suicides, is scarce. A review article exploring the crude suicide rates suggested that suicide rates varied from 0.43/100,000 (1991–2000) in Peshawar to 2.86/100,000 (2006) in Rawalpindi (Khan et al., 2008a, 2008b). The crude suicide rates were highest in Rawalpindi, Punjab, with a gender ratio of 16:1. Men are more likely to complete suicide than women (Khan et al., 2008a, 2008b). However, these estimates are believed to be significantly lower than actual rates due to the reasons previously cited (Khan et al., 2008a, 2008b). In a study by Khan and Reza, a 2-year (1996–1997) analysis of completed suicides in a major newspaper in Pakistan, 306 suicides were reported (Khan & Reza, 2000).

The present study explored the current trends of completed suicides in four leading Pakistani Newspapers over two years. This study aims to provide an understanding of the magnitude of this public health issue for better allocation of resources and tangible steps for policymakers. In this paper, the authors explored the demographics and data on characteristics of individuals with completed suicides which can help understand the risk factors and formulate targeted policies and interventions.

Methods

Operational Definition of Suicide

Suicide was operationalized as a completed suicide by any individual for this study. Incomplete or more complex suicides were excluded from the study. Exclusion criteria included suicide attempts, homicide-suicide cases, cases with unclear cause of death (i.e. whether suicide or murder), and cases that were a part of a terrorist attack.

Data Source

In the first step, four Pakistani newspapers were selected for data collection. These newspapers included English language papers—Daily Dawn, Daily Nation and Daily Tribune, and an Urdu language paper -Daily Jang. These newspapers are among the most circulated and credible newspapers. Each newspaper carries a city edition for the major cities of Pakistan. All city editions were incorporated, including five city editions of The Nation, three city editions of Tribune, four city editions of Dawn, and five city editions of Daily Jang.

Data Extraction

In the pilot phase, the data were extracted from newspaper reports from January 2019. The pilot phase demonstrated a significant but incomplete overlap of reported suicides in English papers. Most of the completed suicides that were reported in the Urdu newspaper Daily Jang were not reported in English newspapers. For all papers, we searched e-papers, including all city pages' online editions and identified details of the suicide incident for data extraction. During the actual data extraction stage, the data collection was from reports between January 1st, 2019 and December 31st, 2020, a total of two years. Four reviewers each reviewed one newspaper for reports of suicides during the study period. Data was extracted about various sociodemographic characteristics, methods of completed suicide, possible motives, suicide notes left behind, and other information that may help explain the completed suicides. The study team entered data in Microsoft Excel sheets.

One of the senior authors (NI) subsequently rechecked and edited all entries in the spreadsheet to avoid duplications of suicide cases. Two senior authors (SN & IIH) cross-checked the data to ensure accuracy, remove duplicates, and identify missing. Descriptive statistics were used to analyze the data extracted from the newspaper reports using SPSS 26.

[1] Suicide in Pakistan decriminalized on December 23rd, 2022.

Table 1 Demographic characteristics of completed suicides (n = 2295)

Variable	Number	%
Age categories (n = 1341)		
Under 10	0	0
10–20	418	31.1
21–30	538	40.1
31–40	199	14.8
41–50	103	7.6
51–60	48	3.5
> 60	35	2.6
Missing information	954	41.5
Gender		
Male	1420	61.87
Female	875	38.12
Marital status (n = 521)		
Married	455	87.33
Unmarried	53	10.17
Divorced/separated	9	1.72
Widow	3	0.57
Engaged	1	0.19
Missing information	1174	51.15
Education (n = 67)		
School student	32	47.7
Intermediate college student	15	22.3
Seminary student	1	1.4
Bachelors	7	10.4
Masters	7	10.4
Medical Professionals	3 (1 doctor, 1 third year medical student and 1 nursing student)	4.4
Lawyer	2	0.9
Missing information	2228	97.08
Occupation (n = 335)		
Semi-skilled workers	136	40.5
Student	67	20
Unemployed	55	16.4
Skilled workers/professionals	39	11.6
Police/security personnel	22	6.5
Prisoners/Alleged criminals	11	3.2
House wives	5	1.4
Missing information	1960	85.40
History of mental illness	77	3.3
History of attempted self-harm/suicide	8	0.34
History of drug abuse	13	0.5

Results

Demographic Characteristics

The search of online archives of all selected newspapers yielded reports of 2295 unique completed suicides from January 1, 2019, to December 31, 2020. Among them, 1,156 news reports were from 2019, and 1140 were from 2020. Table 1 summarizes the demographic characteristics of completed suicides in Pakistan.

Age and Gender

Of the 2295 suicides reported, 1420 were men (61.87%), and 875 were women (38.12%). Subjects' ages ranged from children identified as greater than ten years or age

to elderly patients more than 60 years of age. Most suicides occurred in the age group under age 30 (71.2%). About 14.8% of suicides were completed by individuals from 31–40 years of age, 7.6% by people to 41–50 years, 3.5% by people ages 51–60 years, and 2.6% by individuals ages > 60 years. This information was missing in 41.5% of completed suicides.

Marital Status

Of those who reported marital status, about 87.33% (455) of completed suicides were among married individuals (297 were women and 158 were men). Data on marital status were missing in 1174 reports. Five women and four men were divorced or separated, and one man was reported to be engaged. One woman and two men were widowed. In addition, 30 women and 23 men were single (10.17%).

Occupational Status

The occupations of the subjects were reported in 335 reports only. Of 335, 40.5% were semi-skilled workers, 20% were students, 16.4% were unemployed, and 11.6% were skilled workers or professionals. Twenty-two subjects were from the police workforce or security personnel (6.5%), and 11 were prisoners or alleged criminals (3.2%). Only five (1.4%) were reported to be homemakers.

Geographical Distribution

Most of the completed suicides occurred in Punjab (79.7%). About 14.6% of suicides were reported in Sindh, 3.6% in KPK, 1.9% in Balochistan, and 0.04% in AJK. More suicides were reported in urban areas (59.7%) than in rural areas (40.2%). Four hundred forty-two reports didn't specify any geographic region. Of 636 completed suicide that specified location, 66.03% of suicides occurred inside homes, and 33.96% occurred outside the home.

Characteristics of Suicide

Table 2 summarizes the characteristics of completed suicides in Pakistan.

Table 2 Characteristics of completed suicides in Pakistan

	N	%
Provinces		
Punjab	1830	79.7
Sindh	336	14.6
KPK	84	3.6
Balochistan	44	1.9
AJK	1	.04
Area (n = 1853)		
Urban	1107	59.7
Rural	746	40.2
Missing information (442)	442	19.26
Location (n = 636)		
Inside home	420	66.03
Outside home	216	33.96
Missing information	1659	72.29
Methods of suicide (n = 2195)		
Poisoning	959	43.69
Strangulation/hanging/asphyxia	672	30.6
Firearm	298	13.57
Drowning	101	4.6
Jumping in front of moving vehicle/hit and run	69	3.1
Fire/smoke	52	2.36
Jumping off height	16	0.7
Sharp weapon	27	1.2
Others (blunt injury to head, banging head on wall)	1	0.04
Missing information	100	0.05
Motive for suicide (n = 1615)		
Domestic conflicts	1142	70.7
Financial reasons/poverty	229	14.1
Failure in love/marriage	101	6.2
Mental illness	47	2.9
Physical ill health	32	1.9
Court/Trial related stress	18	1.1
Rape/being blackmailed after sexual assault	13	0.8
Bereavement/grief	10	0.6
Workplace/business related stress	8	0.5
Exam failure	8	0.5
COVID-19 related factors	5	0.3
Police brutality	1	0.06
Forced marriage	1	0.06
Unclear motive in suicide reports	680	29.63

Reasons for Suicide

Domestic conflicts were the most commonly reported reason for suicide, contributing to 70.7% of the completed suicides. Domestic conflicts were followed by 'financial reasons/poverty', contributing to 14.1% of individual suicides. 'Failure in Love/Marriage' was reportedly a motive in 6.2% of cases. Mental illness contributed to 3.3% of the reported suicides, and physical illness contributed to 1.9%. Other reported causes included 'Court/Trial related stress' (1.1%), 'rape/being blackmailed after sexual assault' (0.8%), 'bereavement/grief' (0.6%), 'workplace/business-related stress' (0.5%), 'exam failure' (0.5%), 'COVID-19 related factors' (0.3%), 'police brutality (0.06%) and 'forced marriage' (0.06%). Motive was unclear or unreported in 680 completed suicides.

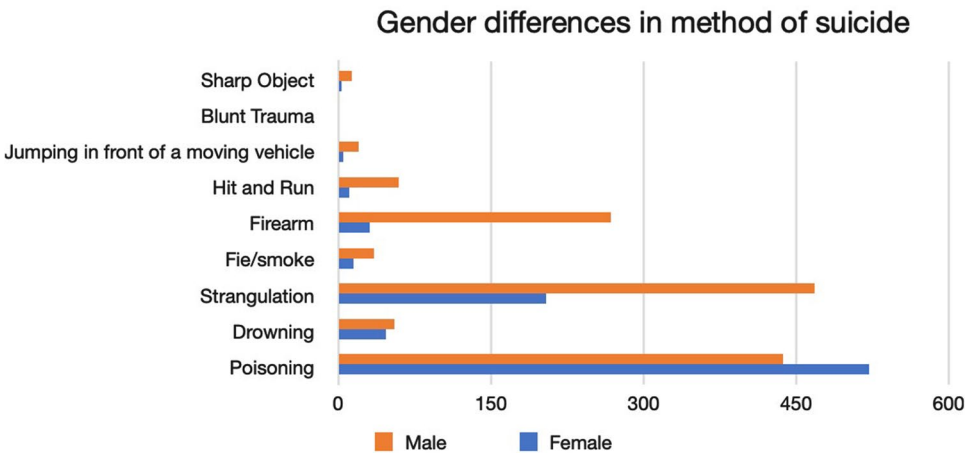

Fig. 1 Gender differences in methods of completed suicides

Methods of Suicide

The most frequent methods of suicide were reported to be poisoning in 43.69% (522 women and 437 men), followed by hanging in 30.6% of cases (204 women, 468 men). Firearms were used in 13.57% of completed suicides (31 women and 268 men). One hundred two subjects drowned (4.6%), of which 47 were women and 55 were men, whereas 70 individuals jumped in front of a moving vehicle (hit and run, 3.1%, 11 women and 59 men). Other methods include use of fire/smoke in 2.36% cases (15 women and 35 men), jumping off a height in 0.7% (5 women and 20 men), use of a sharp weapon in1.3% (3 women and 13 men), and blunt injury to head/banging head on wall in one man (0.04%). About 100 reports did not comment on the methods of suicide. Figure 1 summarizes the gender differences in methods of completed suicides, and Table 3 highlights the substances used for self-poisoning in completed suicides.

Table 3 Substances ingested during suicide

Substance used for poisoning	Total no. reported (N = 313, 649 missing)
Chemicals	38 (12.14%)
1. Acid	16
2. Bleach	4
3. Pesticides	15
4. Uncategorized	3
Pills	177 (56.55%)
1. Sleeping pills	4
2. Rat pills (anticoagulants)	5
3. Wheat pills (zinc or aluminium phosphide)	65
4. Uncategorized	103
Kaala Pathar (Paraphenylenediamine)	98 (31.31%)

Discussion

This study analyzed data of suicides reported in four major newspapers over two years, with 2295 reports included in the study, making it currently the largest data of this kind from Pakistan. This study aimed to explore the magnitude of the completed suicides and provide insight into demographic characteristics, methods of completed suicides, and underlying motives. Most completed suicides occurred in individuals < 30 years of age and married individuals. The most commonly reported methods were ingestion of a poisonous substance, hanging, and firearms. Domestic conflicts were the most common reason for these suicides. It is worth noting that only 3.3% of individuals had an underlying mental illness, suggesting underdiagnosis of psychiatric disorders.

Our data shows a higher percentage of completed suicides in men (61.87%) compared to women (38.12%), with a male-to-female ratio of 1.6:1. This trend is comparable to previous studies done in the region (Khan & Reza, 2000; Safdar et al., 2021; Värnik, 2012). Most of the completed suicides were reported in individuals ages < 30 years (71.1%). Less than 3% of the completed suicides were reported in the elderly population (age ≥ 60 years). Existing literature in Pakistan shows similar rates. However, these trends are different compared to the Western world and other Asian countries. Existing literature suggests a double peak in age, one < 30 years and the other in late life.(Snowdon, 2019) Pakistan's family system of caring for elders in their older age could be a protective factor for lower rates of suicides in this population (Khan & Reza, 2000). The presence of social support and living with family is a protective factor against depression in older age (Anwar Bhamani et al., 2013).

In the present study, 87.33% of people who completed suicide were reportedly married (297 women and 158 men), while only 10% were unmarried. This trend is consistent with existing data from Pakistan suggesting marriage as

a risk factor for suicide, especially among women. (Qadir et al., 2007) There is an association between marital adjustment, marital satisfaction, perceived social support, and mental health of Pakistani women. Better social support and marital adjustment is crucial for better mental health. However, most women have little autonomy or decision-making ability, lack of leisure time, and lack of relationship with their spouse. These factors may have a profound negative impact on the mental health of married women (Qadir et al., 2013). However, this data should be cautiously interpreted given there was missing information for marital status in 1773 individuals who completed suicides.

The most commonly used method of suicide was reported to be the ingestion of a poisonous substance (43.96%), followed by hanging and firearms. Other methods reported were drowning, jumping in front of a moving vehicle, using fire/smoke, jumping off a height, using a sharp weapon, and blunt injury to the head. The methods reported are comparable to previous studies from South Asia (Arafat et al., 2021; Khan & Reza, 2000). The most commonly ingested substances were pills, and of those specified, wheat pills and Kala Pathar were the most commonly used pills. With their easy availability, low cost, lack of regulation, and high lethality, both have been established as frequently used methods in Pakistan. However, there is a geographical variation, with Kala Patthar being more prevalent in South Punjab and Sindh and wheat pills more frequently used in central and northern Punjab (Safdar et al., 2021).

Hanging was the second most common method used for suicide. About 66% of these suicides occurred inside the house. Among these individuals, hanging was a common method in over 30% of cases. Ceiling fans, doorknobs, and bedposts often serve as leverage points, making hanging a more accessible means to attempt suicide. Among the suicides happening outside the houses, drowning and jumping in front of a moving train were the most frequently reported. Bridges over canals and rivers that form an essential part of the irrigation system of Pakistan's agricultural land are often used to attempt suicide. These findings shed light on the need to make a more comprehensive suicide prevention policy targeting common means of attempting suicide. Interventions could include regulation of marketing of lethal poisons, protective railings on bridges, gun control, and use of media for education and support of people to help increase the reach of mental health services. Gender differences in the choice of method of suicide suggested that men were more likely to choose violent means of suicide, such as hanging, firearms, and jumping in front of moving vehicles. The use of firearms was significantly more common in men (268 men and 31 women). In a study comparing the gender difference in methods used for suicide, Tsirigotis and colleagues discussed that men are likely to choose the highly lethal method compared to women (Tsirigotis et al., 2011).

Over 70% of the cases reported a domestic conflict as a reason to complete suicide. In a country like Pakistan, mental illnesses are often underreported due to prevalent stigma. The underreporting is evident from the fact that only 3.3% of the victims were reported to have a history of mental illness, 0.34% with a history of previous self-harm, and only 0.5% with a history of drug abuse. In a case–control study from Karachi, the psychological autopsy of 100 completed suicides, 96 had an ICD-10 psychiatric disorder, and 79 had moderate to severe depressive illness (Khan et al., 2008a, 2008b). The underreporting of mental illness could be due to a lack of knowledge of the reporters about mental health, and police reports being the primary source of information for such news. The second most common motive was financial reasons/ poverty. Within reports mentioning the occupational status of the victims, 40% of victims were semi-skilled workers, and 16% were unemployed. Kuroki studied the relationship between unemployment and suicide in both genders and over-various age ranges in Japan. They reported that unemployment had a significant association with the suicide rate in men, especially young men of prime working age (Kuroki, 2010).

This study has several limitations, such as missing data, reporting biases, underreporting of cases due to stigma, and fear of being persecuted. Suicide is still a criminal offense in Pakistan, although decriminalization is proposed and underway in the legislative bodies. However, this study sheds light on the acute crisis of the rising trend of suicide in Pakistan. A comprehensive suicide prevention policy with easy access to mental health services is necessary to the growing problem.

Conclusion

The younger population (ages < 30 years) is under significant pressure to earn money, establish careers, support families, and maintain relationships, which leaves them vulnerable to higher rates of mental illnesses leading to a higher risk of completed suicides. Men are more likely to complete suicide than women, although marriage is a risk factor for suicide for women. Most of the victims used poisons, followed by hanging and firearms—the lethal methods' easy availability and low-cost highlight ongoing gaps that the policymakers can easily address. Pakistani society has a stigma associated with mental health problems leading to patients suffering in silence rather than seeking help. Depression, the leading cause of such suicides, is a treatable illness, and tangible steps are required to address stigma and access to care. Based on the points highlighted in this study, policymakers and providers can devise interventions to address this preventable cause of death.

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Declarations

Conflict of interest On behalf of all authors, the corresponding author states that there is no conflict of interest.

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