

# Characteristics of Individuals with Self-Harm: A Retrospective Descriptive Study from Karachi, Pakistan

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## Research Article

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# Abstract

**Background:** Self-Harm (SH) is a major global public health problem which is under-researched in Pakistan. A prior act of self-harm is one of the strongest predictors of future suicide.

**Method:** This retrospective descriptive study describes the characteristics of SH cases (n=350) that presented to a tertiary care teaching hospital in Karachi, Pakistan, from January 2013 to December 2017. Details related to demography, history, associated factors, access to methods used, and intent to die were collected on a structured proforma and analysed using STATA version 14.

**Results:** It was found that self-harm acts were twice as more common in females than in males. More than half of the reported cases were in the age group 20-39 years. Drug overdose and use of insecticides were the two most common methods used in both genders.

Depression was identified in nearly half of the reported SH cases. Intention to die was found to be 3 times greater among patients with psychiatric illness as compared to those with no history of psychiatric illness.

**Conclusion:** This study suggests that limiting access to lethal means, regulating over-the-counter sale of medications, and safe storage of pesticides can possibly serve as effective measures to minimize self-harm incidences. Moreover, integration of suicide assessment and prevention programmes for the general population is also suggested.

## What This Paper Adds

- Recent data regarding characteristics of self-harm from a Pakistani context.
- Identification of the age group, between 20-39 years, at higher risk of self-harm.
- Finding that benzodiazepines and insecticides/pesticides containing organophosphorus compounds were the most common methods used by both genders.

## 1. Background

Suicide is a major public health concern worldwide, irrespective of ethnicity, race, gender, age, culture, and religion (1). Nearly 800,000 people die annually by committing suicide globally (2). Approximately 79% of the global total reported cases of suicides are from low and middle income countries (LMICs) (2). A prior act of self-harm (SH) is one of the strongest predictors of future suicide(3). Research has shown that approximately 45% people contacted their health care professionals about a month prior to the SH act; however, the patterns and characteristics of the SH act were mostly overlooked and the required support was not provided (4, 5). Literature also affirms that the risk of repeating SH after an index attempt increases in the future (6).

Pakistan is an Islamic country, with an estimated population of 212 million people, in which health and mental health care systems and its monitoring have lagged behind due to political and financial instability(7, 8). Issues related to mental health receive less priority since the available resources are insufficient to meet the demands of other physiological health care needs.

Karachi is the country's largest city. It has the principal seaport, is the major industrial and commercial hub, hence, it attracts people from all parts of Pakistan. Therefore, it is a densely populated, multilingual, and multicultural city as Pakistan has a distinct variety of languages and cultures. It is estimated that about half of the population in the city lives in slums, with compromised access to basic necessities (9).

Over the last couple of decades, incidences of suicide and SH have been gradually increasing in the country (10). However, both are underreported due to religious, legal, social, cultural, and moral taboos in the country. In Pakistan, suicide and SH are criminalized acts subject to legal punishment of imprisonment for a year and/or fine (11). Studying the characteristics of individuals with SH is important for both primary as well as secondary prevention of suicidal behaviours (suicide and SH). The aim of this study, therefore, was to review the characteristics of individuals who presented with SH acts during 2013–2017, at a tertiary care hospital in Karachi, Pakistan.

## 2. Methods

A retrospective descriptive study was conducted to collect information about the characteristics of individuals who presented with a SH act at the Aga Khan University Hospital (AKUH), Karachi, Pakistan, between January 2013 to December 2017. AKUH is a private, fees-for-service, tertiary care teaching hospital, located in the centre of Karachi, with a capacity of about 700 beds. It has facilities for nearly all medical specialties, including an inpatient psychiatry unit with 18 beds. More than half of the patients seeking medical care belong to the low to middle socio-economic class and are from various parts of the country(5). Records of all patients visiting the AKUH, for any medical service, is protected and recorded by the Department of Health Information Management System (HIMS) with high end confidentiality.

Medical records of patients with a definite diagnosis of SH, of either gender, aged 11 years and above at the time of admission, were selected from the HIMS, using the departmental internal log and the unique computerized coding. Cases related to “Drug Overdose, Poison Ingestion, Suicide, Attempted Suicide, (Deliberate) Self-Harm, Self-Injury, and Physical Harm” were selected. The study proforma included information related to demographic characteristics, past history of psychiatric or any other medical illnesses, and psychosocial factors, which were collected from medical records. Besides, information related to the method of SH, the intent to die, and previous SH behaviour was also extracted. Study exemption was obtained from the Institutional Ethical Review Committee of the AKUH for conducting this study.

During this time period, presentation of 350 cases of SH was reported at AKUH. These cases were analysed using STATA version 14. Quantitative variables were summarized by using mean and standard deviation; whereas, qualitative variables were summarized using frequency and percentages, stratified on

gender. The crude prevalence ratio, with 95% confidence interval was utilized to see the association of intention to die with past psychiatric illness, using the cox proportional algorithm.

### 3. Results

#### 3.1 Socio-demographic characteristics

Out of the 350 cases with SH, 68.3% (n = 239) were females and 31.7% (n = 111) were males. Their ages ranged from 11 to 75 years with a mean age of 28.7 ( $\pm$  11) years. More than half of the cases (63%) were in the age group of 20–39 years, followed by adolescents aged 11–19 years (21%). About 46% (n = 161) had had no formal education, whereas 5.4% (n = 19) were unemployed. Other socio-demographic variables are listed in Table 1.

Table 1

Socio-demographic characteristics of individuals with self-harm (n = 350)

<b>Socio-Demographic Characteristics</b>	<b>n (%)</b>	<b>Male 111 (31.7)</b>	<b>Female 239 (68.3)</b>
<b>Age (in years)</b>	28.7 (11.0)	28.4 (13.0)	28.8 (10.0)
Mean (SD)	72 (20.6)	32 (28.8)	40 (16.7)
Adolescents (11–19 years)	221 (63.1)	61 (55.0)	160 (67.0)
Young adult (20 to 39 years)	53 (15.4)	15 (13.5)	38 (15.9)
Middle adult (40 to 59 years)	4 (1.4)	3 (2.7)	1 (0.4)
Older adult (60 years and above)			
<b>Religion</b>	306 (87.4)	94 (84.7)	212 (88.7)
Muslim	44 (12.6)	17 (15.3)	27 (11.3)
Others			
<b>Marital Status</b>	161 (46.0)	72 (64.9)	89 (37.2)
Single	189 (54.0)	39 (35.4)	150 (62.8)
Ever Married	176 (50.3)	37 (33.3)	139 (58.2)
Married	13 (3.7)	2 (1.8)	11 (4.6)
Divorced / separated			
<b>Occupation</b>	131 (37.4)	2 (1.8)	129 (54.0)
Housemaker	101 (28.9)	40 (36.0)	61 (25.5)
Student	99 (28.3)	53 (47.8)	46 (19.3)
Employed	19 (5.4)	16 (14.4)	3 (1.3)
Unemployed			
<b>Educational status</b>	161 (46.0)	57 (51.4)	104 (43.5)
No formal education	79 (22.6)	22 (19.8)	57 (23.9)
Up to secondary	110 (31.4)	32 (28.8)	78 (32.6)
Above secondary			

#### 3.2 Psychiatric and medical history

Nearly 28% (n = 97) of the total cases had a history of past psychiatric illness, out of which the majority (70%, n = 68) were on psychiatric medicines. The intention to die was found to be 3 times greater among patients with psychiatric illness, as compared to patients with no history of psychiatric illness (1.7, 4.0). About half (n = 45) of the cases with an intent to die had a history of past psychiatric illness, while, 47% of these total cases (with intent to die) were diagnosed with depression at the time of admission (n = 46). Amongst females, 13.8% (n = 33) had a history of one past attempt, while 9.2% (n = 22) had a history of multiple (at least two) past SH attempts. 8.1% (n = 9) of the males had a history of one past attempt, while only one case had a history of multiple (at least two) past attempts. SH cases diagnosed with psychiatric illness were 44.6% (n = 156). The most common diagnosis was depression in both genders, followed by substance abuse among males and personality disorder among females. With regard to medical illness, 87% (n = 304) had no current history. Table 2 provides details about the psychiatric and medical history of reported cases.

Table 2

Psychiatric and medical history of individuals with self-harm (n = 350)

<b>Medical and Psychiatric History</b>	<b>n (%)</b>	<b>Male 111 (31.7)</b>	<b>Female 239 (68.3)</b>
Current history of medical illness	46 (13.1)	7 (6.3)	39 (16.3)
Yes	304 (86.9)	104 (93.4)	200 (83.7)
No			
Past psychiatric history	97 (27.7)	29 (26.1)	68 (28.5)
Yes	68 (70.1)	21 (72.4)	47 (69.1)
On meds	29 (29.9)	8 (27.6)	21 (30.9)
No meds	253 (72.3)	82 (73.9)	171 (71.5)
No			
Previous attempt	65 (18.6)	10 (9.0)	55 (23.0)
Yes	42 (12.0)	9 (8.1)	33 (13.8)
Once	23 (6.6)	1 (0.9)	22 (9.2)
Multiple	285 (81.4)	101 (91.0)	184 (77.0)
No			
Psychiatric diagnosis on assessment	194 (55.4)	63 (56.8)	131 (54.8)
Absent	156 (44.6)	48 (43.2)	108 (45.2)
Present	115 (32.3)	37 (33.3)	78 (32.6)
Depression	6 (1.7)	1 (0.9)	5 (2.1)
Acute stress	5 (1.4)	-	5 (2.1)
Psychosis	11 (3.1)	2 (1.8)	9 (3.8)
Personality Disorder	4 (1.1)	4 (3.6)	-
Substance abuse	1 (0.9)	-	1 (0.4)
Anxiety	1 (0.9)	-	1 (0.4)
Bipolar	13 (3.7)	4 (3.6)	9 (3.8)
Others			

### 3.3 Time period of self-harm

The number of cases reported were slightly higher during the initial two years of the study period (Refer Fig. 1).

### **3.4 Method and reason for self-harm (Table 3)**

Among male participants, the most common method used for attempted SH was ingestion of organophosphate (49%, n = 55), followed by drug overdose (47%, n = 52) and (physical) self-injury (4%, n = 4). In contrast, among female cases, the majority (68%, n = 168) used drug overdose, followed by ingestion of organophosphate (30%, n = 73) and (physical) self-injury (2%, n = 4).

Table 3 illustrate further details of the methods used and the reasons of SH. In cases of drug-overdose, benzodiazepines were found to be the most common drug, used by 35% (n = 121) cases. Among the cases of ingestion of organophosphate, insecticides (25%, n = 87) were the most common method used. Of the eight (physical) self-harm cases, the most common were cutting throat /slashing wrists (n = 3), followed by jumping from a height (n = 2) and banging/ beating themselves (n = 2). A substantial proportion (82%, n = 288) reported that the chosen method was available at home, while 18% (n = 62) had bought it specially with the intention of self-harm. Amongst female cases, the most common reason of attempt was found to be family (30%, n = 71) and marital (18%, n = 41) conflicts, while among male cases the most common reasons were family conflicts (34%, n = 38) and relationship issues (14%, n = 15).

Table 3

Methods and reasons for self-harm (n = 350)

	n (%)	Male 111 (31.7)	Female 239 (68.3)
<b>Method used for current attempt to inflict self-harm</b>	214 (61.1)	52 (46.8)	162 (67.8)
Drug overdose	121 (34.6)	38 (34.2)	83 (34.7)
Benzodiazepines	4 (1.1)	-	4 (1.7)
Tricyclics	11 (3.1)	1 (0.9)	10 (4.2)
Anti-Psychotics/Barbs	3 (0.9)	-	3 (1.3)
SSRIs	53 (15.1)	10 (9.0)	43 (18.0)
Other Medicine	13 (3.7)	3 (2.7)	10 (4.2)
Combination of drugs	9 (2.6)	-	9 (3.8)
Not known	136 (38.9)	59 (53.1)	77 (32.2)
Other substances / methods	128 (36.6)	55 (49.4)	73 (30.4)
Ingestion of organophosphate	8 (2.3)	3 (2.7)	5 (2.1)
Phenyl	4 (1.1)	2 (1.8)	2 (0.84)
Bleach	3 (0.9)	1 (0.9)	2 (0.84)
Corrosive (Acid)	87 (24.9)	38 (24.2)	49 (20.5)
Insecticides	7 (2.0)	-	7 (2.9)
Others	19 (5.4)	11 (9.9)	8 (3.4)
Not Known	8 (2.3)	4 (3.6)	4 (1.7)
Physical	3 (0.9)	2 (1.8)	1 (0.4)
Cutting/ slashing wrist	2 (0.6)	1 (0.9)	1 (0.4)
Jumping from height	2 (0.6)	1 (0.9)	1 (0.4)
Banging/beating self	1 (0.3)	-	1 (0.4)
Not known			
<b>Access to the chosen method</b>	288 (82.3)	83 (74.8)	205 (85.8)
From home	262 (91.0)	75 (66.6)	187 (77.1)
Items available at home	26 (9.0)	8 (7.1)	18 (7.3)
Prescribed drugs at home	62 (17.7)	28 (25.2)	34 (13.8)
Brought from outside			
<b>Reason for attempt to self-harm</b>	48 (13.7)	7 (6.3)	41 (17.5)
Marital conflicts	109 (31.1)	38 (34.2)	71 (29.7)
Family Conflicts	14 (4.0)	9 (8.1)	5 (2.09)
Financial	9 (2.3)	-	9 (3.77)
In-Laws	17 (4.9)	4 (3.6)	13 (5.44)
Academic difficulties	20 (5.7)	5 (4.5)	15 (6.28)
Psychiatric. Illness	4 (1.1)	-	4 (1.67)
Medical Illness	6 (1.7)	3 (2.7)	3 (1.26)
Bereavement	24 (6.9)	15 (13.5)	9 (3.7)
Relationship issues	45 (12.9)	11 (9.9)	34 (14.23)
Refuse to reveal	8 (2.3)	3 (2.7)	5 (2.09)
Mistake	46 (13.1)	16 (14.4)	30 (12.6)
Multiple issues			

### 3.5 Intention of self-harm

In all cases, around one-fourth (n = 97) deliberately harmed themselves with the intention to die, 22% (n = 76) reported it as an impulsive act, and 8% (n = 28) wanted the situation to change. In one-third (n = 116) of the cases, the intention of self-harm remained unknown/unreported. Table 4 outlines the intent for self-harm in the reported cases.

Table 4

Intent for self-harm (n = 350)

Intent	n (%)	Male 111 (31.7)	Female 239 (68.3)
Intent to die	97 (27.7)	30 (27.0)	67 (28.0)
No intent to die	253 (72.3)	81 (73.0)	172 (72.0)
To put pressure	9 (2.6)	5 (4.5)	4 (1.7)
Sleep off	9 (2.6)	2 (1.8)	7 (2.9)
To get out of a situation	28 (8.0)	11 (9.9)	17 (7.1)
Impulsive act	76 (21.7)	23 (20.7)	53 (22.2)
To seek attention	3 (0.9)	1 (0.9)	2 (0.8)
Mistake	12 (3.4)	5 (4.5)	7 (2.9)
Not known/ reported	116 (33.1)	34 (30.6)	82 (34.3)

## 4. Discussion

This study provides a contemporary pattern of SH and socio-demographic characteristics of the reported cases in Karachi, Pakistan. Our findings are in alignment with a number of earlier studies from high, as well as LMICs that reported that SH acts were twice as common in females as compared to males (5, 12–15). Studies from Sri Lanka, Malaysia, and India have reported a peak of SH among people of 20–29 year (14, 16, 17). The probable reasons for the vulnerability of SH behaviour in this age group are recurrent life stressors, pre-morbid psychiatric illnesses, handling difficult personal and interpersonal relationships (18, 19), impulsivity, and maladaptive coping.

Self-harm was mostly reported among married females in this study. The possible explanation could be the patriarchal society, which makes Pakistani women suffer in silence with marital conflicts, issues of living in extended family, and restrictive life circumstances. Similar findings have been reported in studies from Pakistan, India and China, identifying marriage as a significant predictor for suicidal/ SH behaviour among females (5, 20–23).

Overdose of benzodiazepine and ingestion of organophosphorus, accounting for more than two-thirds of the total cases in this study, is comparable with earlier studies from Pakistan (5, 24). Regarding the use of organophosphate overdose, our study is in consort with other studies conducted in China and India (25–27). Moreover, benzodiazepines are reported as the most common medication used in SH in national and regional studies (12, 28–31). A plausible reason could be the over-the-counter (OTC) and low cost availability of benzodiazepines in countries such as Pakistan (24). In the UK, paracetamol and ibuprofen are reported as the most common OTC drugs being used for self-poisoning (32).

Drug legislation to streamline access may have a meaningful effect in reducing drug over dose and SH cases. For instance, a useful mechanism could be reducing the package sizes of OTC drugs, as has been

done for paracetamol in the UK(33). In case of pesticides and insecticides, safe storage and limiting its access through locked cupboards and boxes could be effective (26).

A past history of SH is a strong predictor for subsequent SH acts and/or completed suicide(34, 35), with the risk increasing almost 30–40 times (36). In our study, a few cases had a history of one or more SH behaviours. This finding is consistent with studies from the neighbouring countries (30, 37, 38) and needs further exploration to understand the pattern of SH. Likewise, psychiatric evaluation and follow up care is vital for the prevention and management of SH behaviour/thoughts.

Mental illnesses are reported to be positively associated with suicidal behaviour in literature (39, 40). Our study findings are consistent with this, as nearly half of the cases were diagnosed with mental disorder at the time of assessment, with around three quarters suffering from depression. However, the presence of mental illness does not predict the actual intent to die in all cases of SH. In our study, 'intent to die' was reported in only a quarter of the cases. This finding is optimistic, indicating that the attempts could have been prevented in a majority of the cases, if accessible and affordable psychological support had been available to manage the impulsive SH thoughts and life circumstances(41).

The findings of this study have limited generalizability, since the data is reported from a single private institution in Karachi, Pakistan. The possibility of bias needs to be taken into account due to chances of incomplete or missed details about cases from the retrieved files. Considering prospective data from diverse (public /private/ community) settings in future studies can possibly provide a more comprehensive understanding of this phenomenon.

## **5. Conclusion And Recommendations**

This paper has provided recent data on the characteristics of individuals who inflicted SH in Karachi, Pakistan. Identifying possible methods used for SH and their accessibility is important for effective prevention. The number of SH cases may not reveal the actual magnitude of the issue, especially due to flaws in the monitoring and reporting systems in the country (31, 42). Thus, establishing surveillance and health care systems to capture the extent of SH or completed suicide is needed.

Prevention of SH needs to be considered both for the general population and for individuals at risk. Assessments of depressive symptoms and SH thoughts need to be considered in primary care for its prevention. Limiting access to lethal means and strict practices of dispensing on prescriptions (2) can prevent acting on impulsive self-destructive thoughts. Promoting the practice of individualized suicide safety plan in health care can effectively help manage SH thoughts and prevent self-destructive behaviours (43). Awareness programs for warning signs can also assist in the prevention of SH. Integrating cognitive behavioural therapy (CBT) can be facilitative in the prevention of SH, particularly in the youth (44). Likewise, incorporating social skills building in the curriculum, and initiating school health and peer support programs could be beneficial. Additionally, revamping the role of electronic, print, and social media is vital to promote success stories of individuals who overcome suicidal/SH thoughts.

# Declarations

## Ethics approval and consent to participate

Study exemption was obtained from the Institutional Ethical Review Committee of the AKUH for conducting this study

**Consent for publication:** Not applicable

## Availability of data and materials

The datasets generated and/or analysed during this study are not publicly available due to confidential information of patients but are available from the corresponding author on reasonable request.

**Competing Interest:** The authors declare that they have no competing interests

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## Authors' contribution:

AT: contributed to the conception, supervised data collection, cleaned data, wrote the introduction and discussion part, reviewed the manuscript thrice, formulated the abstract part, cross-check table with description, and finalized the submitted version of paper.
SF: contributed to the conception, audit in data collection, cleaning data, writing the introduction and discussion part, edited abstract part, cross-check table with description, and finalized the submitted version of paper.
MA: Input in planning of the study, data cleaning and analysis, formulation of tables and figure, wrote method and result sections, and reviewed the submitted version of paper.
UT: Review paper and reviewed the submitted version of paper.
MMK: Mentorship throughout the project, access department log, critical input in the study and in the submitted version of paper.

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## Authors' information (optional)

None

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## Figures

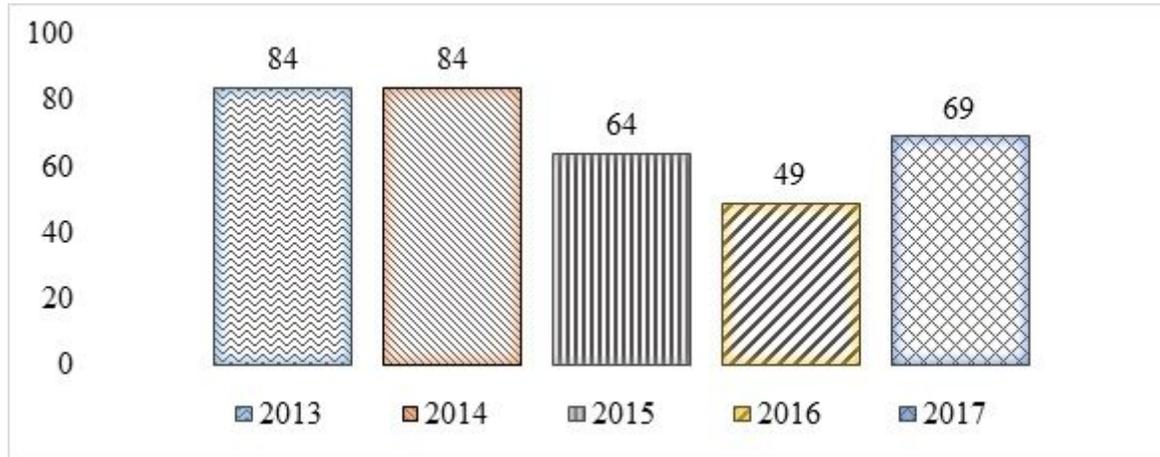


Figure 1

Time period of self-harm during 2013-2017