Psychiatry Research 279 (2019) 201–206

Contents lists available at ScienceDirect

Psychiatry Research

journal homepage: www.elsevier.com/locate/psychres

Demographic and psychosocial characteristics of self-harm: The Pakistan perspective

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ARTICLE INFO

Keywords:
Suicide
Pakistan
LMIC
Depression
Suicidal ideation
Self-harm

ABSTRACT

Self-harm is a major public health issue in Pakistan, yet the characteristics of those who self-harm are under-explored. This is a secondary analysis from a large randomized control trial on the prevention of self-harm, exploring demographic, clinical and psychological characteristics of people who self-harm in Pakistan. A total of 221 participants with a history of self-harm were recruited from medical wards of three major hospitals in Karachi. The Beck Scale for Suicidal Ideation (BSI), Beck Depression Inventory (BDI), Beck Hopelessness Scale (BHS), and Suicide Attempt Self Injury Interview (SASII) assessment scales were completed. The sample consisted predominantly of females (68.8%) in their 20's. Interpersonal difficulties were most commonly reported as the main antecedent to the self-harm, followed by financial difficulties. Participants had high severity scores on BSI, BDI and BHS. Pesticide and insecticide use were (n = 167, 75.6%) the most common methods of self-harm. The findings indicate that some characteristics of those who self-harm in Pakistan are comparable to other populations. This may raise the possibility of common causal mechanisms and processes. Future research needs to examine the efficacy of interventions targeting these risk factors in reducing rates of self-harm and thus suicide.

1. Introduction

Suicide is the 18th leading cause of death worldwide, accounting for 1.4% of all reported deaths and most occurring in Lower and Middle-Income Countries (LMIC; World Health Organization, 2016). Self-harm is associated with a greater risk of subsequent self-harm (Hawton et al., 2012; Perry et al., 2012), suicide (Hawton et al., 2012; Ribeiro et al., 2015), and all-cause mortality (Bergen et al., 2012). Previous suicide attempt is found to be a significant risk factor for completed suicide in the general population (World Health Organisation, 2014). The implications of self-harm extend beyond the considerable emotional distress involved, to high costs on health services (Sinclair et al., 2011). Detrimental social and psychological effects are also often experienced by the families of patients engaging in self-harm (Ferrey et al., 2016). There is much data on the characteristics of individuals who present at hospital following self-harm from high income countries (Geulayov et al., 2016). This information is useful in guiding prevention and intervention strategies. It should not be assumed that these characteristics are the same in LMICs as in high income countries. Self-harm is still under-researched in Pakistan and epidemiological data are limited (Shekhani et al., 2018). As such less is known about the common characteristics and antecedents of self-harm in these countries.

Many people living in Pakistan face increased economic and social pressures, compared to those in higher-income countries (Husain et al., 2011) and as such these would be expected as common antecedents for self-harm. The Labour Force Survey (2017–18) identified literacy rates of 62.3% in Pakistan (Pakistan Bureau of Statistics, 2018). The average income in this survey reported a monthly income of Rs. 18,754 (GBP 102.46; Pakistan Bureau of Statistics, 2018). These difficulties may be associated with difficult psychological states, including anxiety, depression, hopelessness and suicidal ideation, which in turn are associated with the risk of self-harm (Fox et al., 2015; Fliege et al., 2009).It is important to ascertain the extent to which these characteristics remain consistent across cultures and locations, since variations may imply that distinct mechanisms underlie self-harm in these contexts, and that appropriately tailored interventions are required

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https://doi.org/10.1016/j.psychres.2019.02.070
Received 5 November 2018; Received in revised form 26 February 2019; Accepted 27 February 2019
Available online 07 March 2019
0165-1781/

(Cervantes et al., 2014). For example, there is preliminary evidence of divergence relating to gender differences, prevalence and functions for self-harm across cultures (Gholamrezaei et al., 2017). Data concerning self-harm in Pakistan are scarce. Numerous barriers, including a lack of existing research infrastructure but also the illegal and highly taboo status of self-harm, make it difficult to collect data regarding self-harm in this country. A recent scoping review synthesized literature on self-harm in Pakistan, highlighting the characteristics of this population. Self-harm was more frequent in females of a younger age group (Shekhani et al., 2018). Unemployment was associated with self-harm, but this varied across studies (Shekhani et al., 2018). Self-poisoning with insecticides and pesticides was found to be the most common method in both urban and rural areas (Shekhani et al., 2018). The review identified a gap in evidence exploring clinical characteristics of self-harm in Pakistan (Shekhani et al., 2018).

The aim of this study is to explore demographic, psychological (perceived antecedents, depression, hopelessness and suicidal ideation) and clinical characteristics (e.g. method, suicidal intent) of self-harm, to determine whether the same characteristics apply in Pakistan as they do globally. We also examined the psychological correlates of different antecedents for self-harm (e.g. financial problems, interpersonal problems) to investigate whether different antecedents are associated with a distinct psychological profile. The study was conducted with patients admitted to medical wards after an episode of self-harm.

2. Method

2.1. Research design

This is a secondary analysis of data from a large randomised control trial (n = 221) of self-harm prevention conducted in Pakistan. The aim of the primary study was to compare treatment as usual (TAU) with the efficacy of Culturally Adapted Manual-assisted Problem-solving training (C-MAP), which was delivered after an episode of self-harm (Husain et al., 2014). This secondary analysis focuses on the baseline assessment data. Self-harm was defined as:

> 'an act with non-fatal outcome, in which an individual deliberately initiates a non-habitual behaviour that, without interventions from others, will cause self-harm, or deliberately ingests a substance in excess of the prescribed or generally recognised therapeutic dosage, and which is aimed at realizing changes which the subject desired via the actual or expected physical consequences (Schmidtke et al., 1996)'.

2.2. Participants

Recruitment of participants took place at medical inpatient departments of public hospitals in Karachi, Pakistan. With a population of approximately 20 million, Karachi is the largest city in Pakistan. A total of 221 patients were recruited from three major government hospitals in Karachi; Civil Hospital, Jinnah Hospital and Abbasi Shaheed Hospital between the period of March 2010 and October 2012. The individuals who were approached and invited to take part in the study were all admitted to medical units of three participating hospitals following an episode of self-harm. Patients were given information regarding the trial in Urdu and invited to take part in the study. After the participants gave informed consent to take part in the study, assessments were completed by trained researchers. Inclusion criteria were: participants who were between 16 and 64 years of age, living within the catchment area of the participating hospitals and not requiring psychiatric in-patient care. Exclusion criteria were: Participants who met diagnosis of DSM-IV mental disorder due to general medical condition or substance misuse, dementia, delirium, alcohol and drug dependence, schizophrenia, bipolar disorder and intellectual disability as diagnosed by research clinicians. Participants who were temporary residents and unlikely to be available for follow-up were also excluded. The ethical review board of Karachi Medical and Dental College (KMDC) has provided ethical approval for the study [Reference number: ERB-86/DUHS-09]. Relevant approvals were obtained from all the three participating hospitals.

2.3. Measures

2.3.1. Demographic form

The demographic form included information about age, sex, education, marital status, family status, employment status, monthly income. Information was also collected about debt and day's participants had to sleep hungry because of financial constraints.

2.3.2. Suicide Attempt Self Injury Interview (SASII) (Linehan et al., 2006)

An adapted version of the Suicide Attempt Self Injury Interview (SASII) (Linehan et al., 2006) was used to collect details regarding the time, methods, circumstances, motivations and treatment for several forms of self-harm. This semi-structured interview has been shown to have good inter-rater reliability (*ICC* 0.956) and validity (Linehan et al., 2006).

2.3.3. Beck Scale for Suicide Ideation (Beck and Steer, 1991)

Beck Scale for Suicide Ideation (BSI) is a 19-item self-report measure which is used to assess the current intensity of suicidal ideation in the past week (Beck and Steer, 1991). The scoring for the scale is on a 3-point scale ranging from 0 to 2. Higher scores ($\geq$6) on the scale indicate greater risk (De Beurs et al., 2016). The concurrent validity of the BSI against other measures of suicidal ideation has been demonstrated, r = 0.41. Studies in Pakistan have previously used this scale and the reported Cronbach's alpha for the Urdu translation of the BSI is 0.75 (Ayub, 2008). This study found the Cronbach's alpha to be 0.89.

2.3.4. Beck Depression Inventory (Beck et al., 1961)

Beck Depression Inventory (BDI) is a 21-item scale used to measure symptoms of depression. The 4-point scale, constituting a total score of 63, indicates degree of severity (Mild depression 14–19; Moderate depression 20–28 and Severe depression 29–63) (Beck et al., 1961).The BDI correlates highly with the Hamilton Rating Scale for Depression (r = 0.72–0.73) supporting concurrent validity (Beck et al., 1988). Jo and colleagues (Jo et al., 2007) reported test-retest reliability to be high (r = 0.60).The psychometric properties of the Urdu translation of the BDI have been examined in Pakistan, where Cronbach's Alpha coefficients were good (0.75–0.92) (Khan et al., 2015). This study found the Cronbach's alpha for BDI to be 0.97.

2.3.5. Beck Hopelessness Scale (Beck and Steer, 1988)

The Beck Hopelessness Scale (BHS) assesses three aspects of hopelessness: feelings about the future, loss of motivation and expectations during the past week through a 20-item self-report instrument (Beck and Steer, 1988). The total corresponds to a range of 0–30 and helps assess the level of severity of hopelessness; normal (0–3), mild hopelessness (4–8), moderate hopelessness (9–14), severe hopelessness (>14) (Beck and Steer, 1988). The test-retest scores of the scales are found to be good (r = 0.81). Ayub and collegues (2009) have used the BHS in Pakistan and have reported the reliability coefficient (Kuder–Richardson Index) for the Urdu version as 0.81 (Ayub, 2009). This study found the Kuder–Richardson Index to be 0.93.

2.4. Statistical analysis

SPSS-Version 20 was used to conduct the analysis. Descriptive statistics including means, frequencies and percentages are reported for self-harm and sample characteristics. Comparisons were made between genders for all study characteristics. Continuous variables were compared using the unpaired t-test if found to be normally distributed, and

Table 1
Characteristics of the sample.

	Total (N = 221) Mean (SD) or Median [IQR]	Male (N = 69)	Female (N = 152)	M vs. F P-value
Age (years)	22 [19, 26]	22 [19, 25]	22 [18, 26]	0.84
Total monthly income (PKRs)	10,000 [7000, 14,000]	12,000 [8000, 15,000]	9000 [7000, 12,000]	0.002
Suicidal Ideation (BSI)	21.0 (7.3)	21.1 (7.1)	21.0 (7.5)	0.93
Hopelessness (BHS)	17 [12, 19]	17 [13, 19]	17 [12, 19]	0.98
Depression (BDI)	27.1 (14.9)	27.0 (16.5)	27.2 (14.1)	0.93
	N (%)			M *vs.* F P-value
Marital status				
Single	163 (73.8%)	59 (85.5%)	104 (68.4%)	0.02
Married	54 (24.4%)	10 (14.5%)	44 (29.0%)	
Divorced	4 (1.8%)	0 (0.0%)	4 (2.6%)	
Family status				
Nuclear	89 (40.3%)	22 (31.9%)	67 (44.1%)	0.09
Joint	132 (59.7%)	47 (68.1%)	85 (55.9%)	
Education				
No formal education	22 (10.0%)	7 (10.1%)	15 (9.9%)	0.85
Up to 5 years of education	74 (33.5%)	25 (36.2%)	49 (32.2%)	
Up to 10 years of education	65 (29.4%)	21 (30.4%)	44 (29.0%)	
10 to 12 years of education	42 (19.0%)	10 (14.5%)	32 (21.1%)	
12 or more years of education	18 (8.1%)	6 (8.7%)	12 (7.9%)	
Employment				
Yes	58 (26.2%)	46 (66.7%)	12 (7.9%)	<0.001
No	163 (73.8%)	23 (33.3%)	140 (92.1%)	
Named trigger of problems				
Interpersonal	176 (79.6%)	54 (78.3%)	122 (80.3%)	0.66[a]
Financial	44 (19.9%)	15 (21.7%)	29 (19.1%)	
Failure in study	1 (0.5%)	0 (0.0%)	1 (0.7%)	
Debt	104 (47.1%)	32 (46.4%)	72 (47.4%)	0.89
Difficulty in meeting day to day expenses in the last month	132 (59.8%)	42 (60.9%)	90 (59.2%)	0.82
Slept hungry in the last month	35 (15.8%)	7 (10.1%)	28 (18.4%)	0.12
Communicated self-harm				
No	194 (87.8%)	60 (87.0%)	134 (88.2%)	0.83
Indirect communication	16 (7.2%)	6 (8.7%)	10 (6.6%)	
Direct communication	11 (5.0%)	3 (4.4%)	8 (5.3%)	
Suicide note left?	9 (4.1%)	1 (1.5%)	8 (5.3%)	0.28
Intent to die				
No intent	14 (6.3%)	6 (8.7%)	8 (5.3%)	0.61
Minimal intent	44 (19.9%)	14 (20.3%)	30 (19.7%)	
Severe intent	163 (73.8%)	49 (71.0%)	114 (75.0%)	
Method of self-harm				
Ingestion of insecticides / pesticides	167 (75.6%)	53 (76.8%)	114 (75.0%)	0.90
Ingestion of other toxic chemicals	35 (15.8%)	10 (14.5%)	25 (16.5%)	
Ingestion of medication	10 (4.5%)	3 (4.4%)	7 (4.6%)	
Ingestion of medication plus pesticides	5 (2.3%)	1 (1.5%)	4 (2.6%)	
Others (gunshot and jumping from heights)	4 (1.8%)	2 (2.9%)	2 (1.3%)	

Note: BDI = Beck Depression Inventory; BHS = Beck Hopeless Scale; BSI = Beck Scale for Suicide Ideation; £1 = 125 Pak Rupees in March 2010.
[a] Statistical comparison omitting 'failure in study' group due to small numbers.

the Mann-Whitney test otherwise. The chi-squared test was used to compare categorical variables between gender, except for variables with small numbers in some categories, where Fisher's exact test was preferred. Comparisons of severity scores were made between subjects with interpersonal and financial triggers using the same statistical methods as outlined for comparisons between genders. One patient had a different trigger to the remaining patients, and was excluded from these analyses. Pearson correlation was used to examine the association between continuous variables.

Table 2
Correlation and severity levels of scores.

Beck Depression Inventory	Total	Male	Female	P-value
Minimal ≤13	48 (21.7%)	19 (27.5%)	29 (19.1%)	
Mild 14 to 19	15 (6.8%)	4 (5.8%)	11 (7.2%)	
Moderate 20 to 28	40 (18.1%)	9 (13.0%)	31 (20.4%)	0.37
Severe >28	118 (53.4%)	37 (53.6%)	81 (53.3%)	
Beck Hopelessness Inventory				
Minimal ≤3	20 (9.0%)	9 (13.0%)	11 (7.2%)	
Mild 4 to 8	16 (7.2%)	4 (5.8%)	12 (7.9%)	
Moderate 9 to 14	37 (16.7%)	8 (11.6%)	29 (19.1%)	0.29
Severe >14	148 (67.0%)	48 (69.6%)	100 (65.8%)	
Beck Suicidal Ideation Scale				
Low (<6)	10 (4.5%)	3 (4.3%)	7 (4.6%)	1.000
High (≥6)	211 (95.5%)	66 (95.7%)	145 (95.4%)	

	Scale	Pearson Correlation	P-value
Beck suicidal ideation scores	Beck depression scores	0.645	<0.001
	Beck hopelessness scores	0.56	<0.001

3. Results

Socio-demographic characteristics of the sample are reported in Table 1. Most of the patients admitted to the medical wards with self-harm were females (N = 152, 68.8%). They were more likely to be young, living in a joint family system (extended family) and had less than 10 years of education. The majority of the participants reported that their self-harm was with the clear intent to die (N = 163, 73.80%). Most of the participants reported not communicating the thoughts and plans of suicide to anyone (N = 194, 87.8%). Among those who did communicate their suicidal ideation and self-harm to others (outside of the hospital team), indirect communication (e.g. withdrawal/self-isolation; N = 16, 7.2%) was more common as compared to direct communication (N = 11, 5.0%). Use of pesticide and insecticides was the most common method of self-harm by both males and females (N = 167, 75.6%).

Table 2 reports scores concerning suicidal ideation, hopelessness and depression. The sample reported high levels of suicidal ideation (n rated high [≥6] = 211, 95.5%), depression (n rated severe = 118, 53.4%) and hopelessness (n rated severe = 148, 67.0%). None of these three measures varied significantly between males and females. Suicidal ideation was highly positively correlated with both depression (r = 0.65, p < 0.001) and hopelessness (r = 0.56, p < 0.001).

When asked to identify one key trigger or antecedents of self-harm, interpersonal problems were most commonly reported (78% males and 80% females), followed by financial debt (46% of males and 47% of females). The majority of participants (60%) reported having difficulty in meeting their day to day expenses in the last month. Fifteen per cent of participants reported that they had to sleep hungry in the last month due to financial constraints (Table 1). We compared those reporting the main trigger of their self-harm as interpersonal problems against those reporting the main trigger to be financial problems, in terms of their levels of depression, hopelessness, and suicidal ideation, and the results are summarised in Table 3. Those reporting financial problems experienced greater depression, hopelessness and suicidal ideation than those reporting interpersonal problems (p < 0.05 for all).

Table 3
Comparison of severity scores between subjects with different triggers.

	Interpersonal problems (n = 176)	Financial problems (n = 44)	P-value
Suicidal Ideation (BSI)	20.5 (7.2)	23.2 (7.6)	0.03
Hopelessness (BHS)	17 [12, 19]	18 [15, 20]	0.04
Depression (BDI)	25.9 (14.8)	32.3 (14.0)	0.01

Summary statistics are mean (standard deviation) or median [inter-quartile range].

4. Discussion

This study focused on individuals presenting to hospital with self-harm in Pakistan, a Lower Middle-Income Country (LMIC), and investigated the demographic, clinical and psychological characteristics of self-harm in this population. The majority of participants reported clear intent to die as the motivator for self-harm and most did not communicate this intent. Self-harm was more prevalent in females in our sample, who were more likely to be young, single, living in a joint family system (extended family system) and with less than 10 years of formal education. Interpersonal difficulties were the most commonly cited trigger or antecedent for self-harm followed by financial difficulty.

This study is consistent with previous studies conducted in Pakistan reporting that self-harm via ingesting insecticides and pesticides containing organophosphate is common (Khan and Reza, 2000; Shekhani et al., 2018). These compounds are readily available in most homes in urban areas and used for agricultural purposes in rural areas, potentially accounting for their common use as a means of self-harm. The use of poisonous substances in Pakistan as a means of self-harm is linked to a high ingestion: fatality ratio. This ratio is low in high income countries (1–2%) but reported to be as high as 12.7% in some low and middle-income countries (Eddleston et al., 1998). Reported suicidal intent was high in the sample. This does not necessarily mean that self-injurious behaviour associated with lower suicidal intent is less common in Pakistan, but may indicate that such individuals rarely attend hospital. It is plausible that due to the stigma surrounding self-harm and its legal status in Pakistan, only those in more severe medical need attend hospital.

Consistent with previous research in LMICs and high income countries, financial and relationship or interpersonal difficulties were commonly reported as antecedents of self-harm (Khan and Reza, 2000; Shahid et al., 2015; Iemmi et al., 2016; Townsend et al., 2016; Kim et al., 2016). The predominance of interpersonal difficulties means that interventions directed towards these problems could help prevent self-harm. These might include psychosocial interventions designed to support families and resolve conflict, but also one-to-one therapies that focus on interpersonal problems (Husain et al., 2014; Guthrie et al., 2001; NICE, 2011).

Family systems in collectivist cultures, like those in Pakistan, may potentially be associated with unique stressors and interpersonal conflicts. Joint family systems typically consist of two or three generations of males who live together with their dependents (wives, children, parents) and the decision maker tends to be the eldest male. Common interpersonal problems arising in these settings often relate to over-involvement of the extended family in day to day decisions (Farid et al., 2008) but potentially extend to spousal/daughter in law abuse (Winkvist and Akhtar, 2000). In Pakistani women, marital discord and difficulties with in-laws have been associated with self-harm as well as anxiety and depression (Khan, 1998; Mirza and Jenkins, 2004). Although interpersonal difficulties in joint family systems may be associated with vulnerability in women, this is not unique to these systems alone. Married women in nuclear families have also been reported to have a higher risk of depression in Pakistan (Qadir et al., 2013). Social support may be the moderating factor, as it can act as buffer and reduce mental distress in married women (Qadir et al., 2013). Vulnerability may be related to gender roles and differential access to resources, with Pakistani society being recognized as highly patriarchal (Mumtaz et al., 2003). Though literature from Pakistan has described joint family systems as being both protective and as risk factors for psychological distress (Mumford et al., 1997, 2000).

Whilst interpersonal difficulties were more common, individuals citing financial difficulties experienced greater depression, hopeless and suicidal ideation, and so may represent a more psychologically distressed group. This may reflect the severity of the hardship associated with financial problems in Pakistan. In the present study most patients were in debt and reported sleeping hungry at least once in the last month. The severity and impact of poverty may be one example of a stressor that differs between higher income countries and LMICs. This finding supports the idea that interventions aimed at reducing the impact and hardship linked to poverty may also have a value in reducing self-harm.

The lack of educational attainment seen in the sample is consistent with the wider population in Pakistan, where the overall literacy rate is 62.3% out of which 51.8% of females are literate (Pakistan Bureau of Statistics, 2018). It is unclear from this data whether educational attainment is a risk factor for suicide, although previous research in Pakistan suggests this (Shekhani et al., 2018). The median age of the sample was 22 years, consistent with previous evidence from LMICs suggesting higher rates of self-harm in young individuals, aged less than 30 years (Jegaraj et al., 2016; Khan and Reza, 2000; Nojomi et al., 2008; Shekhani et al., 2018). The participants were mostly single. This might reflect the younger age and urban setting of the research, where the average age of marriage is comparatively higher than that in rural settings (Marphatia et al., 2017). These findings may also be indicative of the observation that relationships can be protective (McLean et al., 2008). However, it has been noted that marriage for women in Pakistan can carry additional stressors for some including pressure to have children, lack of self-autonomy and domestic violence (Shekhani et al., 2018). The findings related to sex differences are consistent with global research on self-harm, suggesting that self-harm is more common in females (Perry et al., 2012; Shekhani et al., 2018).

A major limitation of this study is that the sample was recruited from individuals presenting to hospital after self-harm. Thus, it does not account for the cases of self-harm presenting to primary care or outpatient settings, let alone those not presenting to healthcare services. The participants in this study were from the largest urban city in the Pakistan, potentially limiting the generalizability of the results to the wider population. The lack of a comparison group (i.e. individuals presenting to hospital for other difficulties) is also a key limitation. Nonetheless, the relatively large sample size and use of validated instruments are major strengths of the paper.

This study contributes to our understanding of self-harm by outlining the characteristics of those who self-harm. These findings suggest that some of the characteristics, perceived precipitants, and correlates of self-harm within the Karachi population were comparable to those in other contexts. This finding raises the possibility that prevention strategies and treatments developed for self-harm in other contexts could be adapted and applied to the Pakistani population. Interventions that have been developed in high income countries will still need to consider the local context to develop culturally appropriate adaptations.

Authors' disclosures

None of the authors have anything to disclose.

Conflict of interest

The authors declare no conflicts of interest associated with this research study.

Funding

Pakistan Institute of Living and Learning and the University of Manchester have partly funded the primary study. The sponsors had no role in the study design, collection of data, data analysis, data interpretation or writing of the manuscript.

Author contributions

MOH, MU and PT contributed to the interpretation of results and drafted the manuscript. The idea of the study was conceived by NH, NC and IBC. NH, NC and IBC shared responsibility for the training and supervising researchers as well as preparing the manuscript. TK contributed to recruitment of participants in the primary study and carrying out assessments. TK also contributed to the draft of the manuscript. SA and PT contributed to statistical analysis. All authors have read and approved the final manuscript.

Acknowledgements

This study was jointly funded by the University of Manchester and Pakistan Institute of Living and Learning. The sponsor of the study had no role in the study design, data collection, analysis of the data, data interpretation or writing of the manuscript. We are thankful to all the participants of the primary study. We would like to thank Paul Bassett for his support with statistical analysis.

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.psychres.2019.02.070.

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