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MENTAL ILLNESS STIGMA AND ASSOCIATED FACTORS IN PAKISTAN WITH SPECIAL EMPHASIS ON CENTRAL PUNJAB

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ABSTRACT

Background: Punjab is the most populous province of Pakistan having highest population density in its central region. Despite high levels of psychological distress among local population, low up take of mental health services has been demonstrated. Evidence suggests poor levels of mental health literacy (MHL) and high levels of stigmatizing attitudes among local populations, which may act as barriers to help seeking behaviors. This study aimed to explore the relationships between measures of mental illness stigma, socio-demographic factors and psychological distress, as well as to determine the factors associated with MHL (i.e., correct recognition of mental illness and knowledge of causes) among local population of central Punjab. Methods Participants were recruited from a reputed tertiary care Hospital located in hub of central Punjab that provided mental health services to major chunk of population in central Punjab. As this study is nested within an interventional pilot study evaluating a culturally tailored MHL program, only the pre-intervention survey responses for 80 participants were utilized. The survey measured key aspects of MHL (i.e., recognition of mental illness, knowledge of causes), levels of psychological distress (using Kessler Psychological Distress Scale – K10 scale), and stigmatizing attitudes towards mental illness (using personal stigma subscales and social distance scale). Results The Personal Stigma subscale of 'Dangerous/unpredictable' was strongly positively correlated with participants 'K10 psychological distress cores and strongly negatively correlated with years of education completed. There were moderate negative correlations between two Personal Stigma subscales ('Dangerous/unpredictable' and 'I-would-not-tell-anyone')and unemployment. Being female was associated with an increase in personal stigma demonstrated by higher scores for 'I-would-not-tell-anyone' subscale than males. Similarly, increase in age was associated with decrease on scores of the personal stigma 'Dangerous/unpredictable. Conclusions. While future research with larger sample size are needed, the study findings can be considered as adding to the evidence base on mental illness related stigma in local population of central Punjab. Further, this study provides a starting point in developing the rationale for why population sub-groups specific interventions are vitally essential.

KEYWORDS: Central Punjab, Mental health, Mental health literacy, Mental illness, Stigma.

BACKGROUND

Pakistan is a country in South Asia, world's fifth most populous country, with a population of 241.5 million people and has world's largest muslim population.[1] Pakistan is the site of several ancient cultures, including the 8,500-year-old Neolithic site of Mehrgarh in Balochistan, the Indus valley civilization, Central of Bronze Age, and the ancient Gandhara civilization.[1] Punjab is the most populous province of this diverse country having most of its population concentrated in its northern region which forms 45% of total area and almost 65% of population of Punjab province.[1] According to the Statistics of National Institute of Health (NIH) it is estimated that 66% of women and 25% of men suffered from anxiety and depressive disorders.[2] Levels of emotional distress increased with age in both genders and women living in unitary households reported more distress than those living in extended or joint families, with younger men and women, lower levels of education were associated with greater risk of psychiatric disorder and social disadvantage was associated with more emotional distress.[2] It is found that levels of emotional distress and psychiatric morbidity in a poor district of Rawalpindi to be less than half those in a nearby rural village in the Punjab, although rates in women were still double those in men.[3] Possible explanations are that more healthy people migrate to the cities or that urban living is more conducive to good mental health in Pakistan. Pakistan is facing numerous challenges in the recent past to include terrorism, inflation poor health services which had a deep impact on

population. A population that deals with frequents suicide bombings, the sight of violence, and daily insecurity will be affected psychologically," says Dr. Anthony Feinstein, a University of Toronto professor who studies PTSD.[4] Despite evidence on the high levels of psychological distress among general population, low uptake of mental health services or psychological issues has been demonstrated, while evidence suggests low levels of professional help-seeking behaviours and attitude.[5] Nonetheless, an essential concept that may be related to help-seeking behaviours is mental health literacy(MHL),defined as "knowledge and beliefs about mental disorders which aid their recognition, management or prevention".[5] MHL encompasses "the ability to recognize specific disorders; knowing how to seek mental health information; knowledge of risk factors and causes, of self treatments and of professional help available; and attitudes that promote recognition and appropriate help-seeking". The ability to recognize mental health problems or specific disorders forms a major component of MHL.[6] 'somatisation' is a common phenomenon and accounts for a substantial proportion of 'hidden psychiatric morbidity' in primary care.[7] Presenting psychiatric distress with physical symptoms has been recognized as one of the important factors associated with the reduced recognition and treatment of depression in primary health care.[8] According to WHO data, Pakistan has only 0.19 psychiatrists per 100,000 inhabitants, one of the lowest numbers in WHO Eastern Mediterranean Region, and in the whole world.[9] religious and cultural beliefs of mental illness as originating from supernatural forces is very common reason of not seeing a doctor. Supernatural and religious attributions of mental illness, such as God's punishment, black magic, and satanic powers, are also widespread among Pakistani muslim population.[10]

METHODS

Study design and participants

The current study is nested within an interventional pilot study, which aimed to evaluate a culturally tailored MHL Program designed to enhance MHL of General Pakistani population residing in North Punjab Participants were recruited from a tertiary care hospital located in central Punjab that provided support services to local population. Eligible participants were local residents of central Punjab comprising of women and men aged 18 years or above. In the current study only the survey responses for the 80 participants who completed the pre-intervention survey and participated in the intervention were utilized. All participants provided written consent to participate in the study prior to completing the pre-intervention survey.

Measures

The self-report survey assessing the key aspects of MHL utilized in the present study is based on the survey already done by World Health Organization Regional Office for Mediterranean.[11] And Pakistan demographic and health survey (2017-2018) conducted by National Institute of Population Studies, Islamabad.[12] Survey conducted about mental health in Pakistan by Dawn published on 19 Nov 2022.[13] And survey conducted by Arab News during COVID – 19 restrictions.[14]

Recognition of mental health problem as Recognition of metal health problem as PTSD

The use of vignettes to measure MHL has been previously validated[15], and the vignette utilized in the current study has also been used in several prior studies.[16-18] A culturally valid vignette depicting a fictional characters who witnessed the traumatic events of 8 Oct 2005 earthquake in central Punjab and adjoining areas of Kashmir named 'Gul Khan' or 'Sara Bibi' based on the gender of the participant, was provided to the participants. It was ensured that Gul Khan/Sara's character met the criteria for PTSD as outlined in the 5th edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5).[19] The vignette was used to assess the participants' ability to recognize Gul Khan/Sara' mental health problem as PTSD. Participants were asked 'What would you say is Gul Khan/Sara's main problem?', and they were presented with five possible scenarios with the requirement to select only one choice. Only the response 'Fear/PTSD/Stress Related Disorder' was coded as 'correct', while other options (e.g. weak character, physical condition) were coded as 'incorrect.

Stigmatizing attitudes towards mental illness

Stigmatizing attitudes towards mental illness were assessed utilizing the modified Personal Stigma in Response to Mental Illness Scale The personal stigma scale assessed the participants' personal towards the character described in the vignette (i.e., Gul Khan/Sara's). Participants were asked to respond to seven statements assessing personal stigma using a five- point Like scale, ranging from 1 ('strongly disagree') to 5 ('strongly agree'). The statements were divided into three components: 'I-would-not-tell-anyone', 'Weak-not sick', and 'Dangerous/unpredictable' subscales, as utilized and validated in prior studies. The 'I-would- not-tell-anyone' subscale comprised one item that focused on the belief that it is better not to tell others if they had a similar problem (e.g., "You would not tell any- one if you had a problem like Gul Khan/Sara's"). The 'Weak-not-sick' subscale comprised items that focused on the belief that the person is not legitimately ill, they can control their problem, and their problem is a sign of weakness (e.g., "Gul Khan/Sara's problem is not a real medical illness"). The 'Dangerous/unpredictable' subscale comprised items that focused on the belief that someone with mental problems is dangerous or unpredictable (e.g., "Gul Khan/Sara's problem makes him/her). Higher scores indicate higher levels of

personal stigma for each subscale.

Stigmatizing attitudes towards mental illness were also assessed using five statements from the Social Distance Scale developed by Link et al.[24], and as used in prior studies.[20,25] The Social Distance Scale assessed the willingness of the participants to spend time with Gul Khan/Sara's through several hypothetical relationships (e.g., friend, neighbor, and colleague).[24,26] Participants were asked whether or to what extent they would be pleased "to move next door to Gul Khan/Sara's" or "to have Gul Khan/Sara's marry into your family" among others. The participants were asked to respond to the five statements assessing social distance using a four-point Likert scale ranging from 1 ('Yes, Surely') to 4 ('Obviously not'). The total social distance score was calculated as the sum of the responses to each item, with higher scores indicating greater desire for social distance.

Causal beliefs about developing mental illness

The participants' belief about the causes for developing mental illness was assessed using a question about the possible causes of Gul Khan/Sara's problem. The participants were asked: "How likely do you think each of the following is a factor in this sort of problem developing in anybody?". Participants were presented with 9 possible causes that could have led to Gul Khan/Sara's problem. However, for purposes of this study, only causal beliefs of the illness being a "Punishment from God" or due to "Being a person with a weak character" were considered due to most closely aligning to religious beliefs and/or stigmatizing views and have previously been found to be commonly selected in other studies of MHL of Arabic- speaking samples. The participants were asked to rate each item as 'Yes', 'May be', or 'Not', which for analysis were then collapsed into 1 ('Yes', by combining responses for 'Yes' and 'May be') and 0 ('Not'). General psychological distress The participant's levels of general psychological distress at the stage were measured using K10, which is a scale of non-specific psychological distress developed by Kessler et al.[15] The 10-item questionnaire contained questions related to anxiety, negative mood, and emotional states in order to quantify the frequency and severity of the symptoms during the past four weeks.[20] The items were scored on a five-point Likert scale ranging from 1('none of the time') to 5('all of the time'). Individual scores of the items were summed to attain a total score ranging from 10 to 50, with higher scores indicating higher levels of psychological distress. Based on the total K10 score, the levels of psychological distress were categorized as: low-mild (10–21), moderate (22–29), and severe (30–50).[15] Attributed to its strong psychometric properties, K10 is frequently used in health surveys and across diverse study populations[20], including resettled refugee populations in Punjab.[17]

Statistical analysis

The Statistical Package for Social Sciences(SPSS27.0for Mac, IBM Corp., Armonk, NY, USA) was used for the statistical analysis.[21] Three types of statistical methods were used. Bivariate correlation was used to explore the relationships between stigma scale scores. Multiple linear regression models were used to test which of the demographic variables are best predictors of the stigma scale scores. Multiple logistic regression models were used to test which of the demographic variables and scales are best predictors of correct recognition of the PTSD. A non-parametric Kendall's Tau-b correlation was performed to determine the relationships between the stigma scales (i.e., Personal Stigma Subscales and Social Distance Scale), as well as the relationships between the stigma scales and socio-demographic variables and K10 psychological distress scale. Standard multiple regression analyses were performed to test whether socio-demographic variables predicted the stigma scale scores, with age and gender as independent variables and stigma subscales as the dependent variable. For the multiple linear regression models, percentage variance was presented based on R2. To account for departures from normality, the standard errors of the beta coefficients, p-values and confidence in intervals calculated using bootstrapping based on 1000 samples. Binary logistic regression analyses were performed to measure the effect of socio-demographic factors, psychological distress, and stigmatizing attitudes on the ability to correctly recognize Gul Khan/Sara's mental health problem as PTSD. Correct recognition of PTSD was entered as the dependent variable and socio-demographic factors, psychological distress scale and the stigma subscales were entered as independent variables.

A series of binary logistic regression analyses were also performed to determine whether socio-demographic factors, psychological distress, and stigmatizing attitudes influenced the likelihood of selecting the two causal beliefs as 'likely' for developing a problem like Gul khan/Sara. For each logistic regression analysis, a stigma subscale (e.g., 'I-would-not-tell-anyone'), a socio-demo- graphic factor, or K10 psychological distress scale was entered as the independent variable and a cause (e.g., 'Being a person with a weak character') was entered as the dependent variable. The results of the logistic regression analyses were presented as odd ratios. Benjamini- Hochberg method with a false discovery rate of 25% was used for adjusting for multiple testing. *P*-values of <0.05 were considered as statistically significant.

RESULTS

Socio-demographic characteristics

Table 1 outlines the socio-demographic characteristics of the study participants. Total of (80) participants who completed the pre-

intervention survey were included in the current study. The majority of the participants was females (62.5%) and were married (73.6%).The mean age of the participants was 50.3 years (SD10.6),and they had completed an average of 10 years (SD 2.0) of education. A large proportion of participants were from Mirpur (73.6%), followed by Rawalpindi (18.9%) and Jhelum(7.5%).The main spoken language at home was Punjabi (88.7%), followed by Kahmiri (7.5%) and Potwari(3.8%).The mean K10 Psychological Distress score was 30.8 (SD11.6); 30.1% of participants had a K10 score in the low-mild range (10–21), 9.5% in the moderate range (22-29), and 58.5%inthesevererange (30-50).

Table 1: Socio-demographic characteristics of the study participants.

Characteristics	**Pre-inter vention (n=80)**	
	N	Valid
Gender		
Male	30	37.5
Female	50	62.5
Age (years), mean (SD)	50.3 (10.6)	
Place in Central Punjab / Adjoining Districts of Kashmir		
Rawalpindi	20	18.9
Mirpur	51	73.6
Narowal	2	3.8
Jhelum	4	7.5
Sialkot	2	3.8
Gujrat	1	1.9
Marital Status		
Never married	3	5.7
Married	56	73.6
Fiancé/Partner	1	1.9
Divorced	4	7.5
Widowed	16	11.3
Language spoken at home		
Punjabi	67	88.7
Kahmiri	11	7.5
Potwari	2	3.8
Years of education completed (years), mean (SD)	9.9 (4.0)	
K10 Psychological Distress		
Low-mild (10–21)	12	30.2
Moderate (22–29)	8	9.4
Severe(30–50)	60	58.5

Correlations between the stigma scales

Kendall's Tau-b correlations of Personal Stigma Subscales and Social Distance Scale are presented in Table 2. There was a moderate, positive correlation between 'I-would-not-tell-anyone' and 'Dangerous/unpredictable' subscales, which was statistically significant (τ_b= 0.26, p = 0.013). Means and standard deviations for the stigma scale scores were: I-would-not-tell-anyone (M = 3.1; SD = 1.29); Weak-not-sick (M = 12.3; SD = 2.45); Dangerous/unpredictable (M = 10.19; SD = 3.49); Social Distance (M=11.5;SD=3.6).

Table 2: Kendall's Tau-B Correlations of Personal Stigma Subscales and Social Distance Scale.

Variable	**I-would-not-tell-anyone**	**Weak-not-sick**	**Danger- ous/unpre-datable**
I-would- not-tell- anyone			
Weak-not- sick	0.0029		
Dangerous/ unpredict- able	0.24*	0.111	
Social distance	0.059	-0.112	0.039
* Correlation is significant at p <0.05 (2-tailed)			

Table 3: Multiple linear regression model of socio-demographic predictors of Personal Stigma Sub scales and Social Distance Scale.

	B	Bias	SE	P	95% CI (lower, upper)
I-would-not-tell-anyone					
Gender	0.0770	-0.01	0.35	0.02	0.03, 1.37
Age	-0.08/1	0.00	0.01	0.07	-0.06, 0.00
Weak-not sick					
Gender	1.35	-0.00	0.08	0.058	-0.03, 2.94
Age	0.01	0.00	0.04	0.737	-0.05, 0.08
Dangerous/unpredictable					
Gender	0.24	-0.01	1.11	0.846	-1.95, 2.48
Age	-0.10	0.00	0.0	0.003*	-0.16, -0.02
Social distance					
Gender	-1.22	0.06	1.16	0.273	-3.43, 1.33
Age	-0.01	0.00	0.02	0.683	-0.10, 0.05

Correlations between stigma scales, socio-demographic variables and K10 scale

Kendall's Tau-b correlations of the stigma scales, socio- demographic variables, and K10 psychological distress scale showed strong, positive significant correlation between 'Dangerous/unpredictable' subscale and K10 psychological distress scale (τ_b= 0.25, p = 0.001). There was a moderate, negative correlation between 'Dan- gerous/unpredictable' subscale and length of stay in Punjab (τ_b= -0.22, p = 0.015); and a strong, negative correlation between 'Dangerous/unpredictable' subscale and years of education completed (τ_b= -0.30, p = 0.008). Moreover, there was a moderate, negative correlation between 'I-would-not-tell-anyone' subscale and length of stay in Punjab (τ_b= -0.25, p = 0.016).

Stigmatising attitudes and socio-demographic factors

The Kolmogorov–Smirnov test showed that the Personal Stigma Subscales and Social Distance Scale were not normally distributed (p <0.05). Therefore, bootstrapping which is a non-parametric re sampling procedure was used to test for statistical significance (Table 3). For the regression analysis with 'I-would-not-tell-anyone' as the dependent variable, gender (male = 1; female = 2) had a significant positive regression weight. Females were found to have higher scores for 'I-would-not-tell-anyone' as compared to males, after controlling for age and was retained after adjusting for multiple testing. Age and gender explained 13.9% of the variation in the 'I-would- not-tell-anyone' score. For the regression analysis with 'Dangerous/unpredictable' as the dependent variable, age had a significant negative regression weight, indicating for a unit increase in age there was a decrease in 'Dangerous/unpredictable' score, after controlling for gender and was retained after adjusting for multiple testing. Age and gender explained 12.5% of the variation in the 'Dangerous/unpredictable' score. Regression analyses with 'Social distance' as dependent variable did not reveal any significant differences. Age and gender explained 8.2% of the variation in the 'Weak-not-sick' score, and 3% of the variation in the 'Social distance 'score.

Predictors of correct recognition of PTSD and selection of a cause

Odds ratios of logistic regression analyses of predictors of correct recognition of PTSD and selection of a cause as 'likely' are presented in Table 4. A total of 28 participants (52.8%) correctly identified Gul Khan/Sara's mental health problem as PTSD or the like. Logistic regression models did not reveal significant results for socio-demo- graphic factors, K10 Psychological Distress Scale, Personal Stigma Subscales and Social Distance Scale.

Sixteen participants (29.6%) selected "Punishment from God" as a likely cause of developing mental illness; while 37 participants (68.5%) selected "Being a person with a weak character" as a likely cause of developing mental illness. Logistic regression analyses for the causes "Punishment from God" and "Being a person with a weak character" revealed significant results, but were not retained after adjusting for multiple testing (Table 4). Logistic regression models did not reveal significant results for K10 Psychological Distress Scale, Personal Stigma Subscales and Social Distance Scale.

Table 4: Logistic Regression Analyses of Predictors of Correct Recognition of Ptsd and Selection of A Cause.

Variables	Correct recognition of PTSD AOR (95% CI lower, upper)	Selection of a cause as 'likely' AOR (95% CI lower, upper)	
		"Punishment from God"	"Being a person with a weak character"
Socio-demographic Factors#			
Age	0.99 (0.91, 1.03)	0.98 (0.95,1.06)	1.06 (0.92, 1.20)
Gender	2.55 (0.55, 11.22)	5.0* (1.09, 38.36)	0.54 (0.14, 2.59)
Years of education	1.12 (0.89, 1.29)	1.20 (0.85, 1.39)	1.07 (0.92, 1.23)
Length of stay in Punjab	0.98 (0.92, 1.06)	1.06 (0.98, 1.14)	0.87* (0.77, 0.97)
Psychological Distress Scale#			
K10	0.94 (0.93, 1.04)	0.96 (0.91, 1.02)	0.98 (0.91, 1.06)
Personal Stigma Subscales and Social Distance Scale#			
I-would-not-tell-anyone	0.88 (0.43, 1.45)	0.61 (0.33, 1.30)	0.73 (0.38, 1.47)
Weak-not-sick	0.90 (0.75, 1.40)	0.96 (0.66, 1.32)	0.77 (0.55, 1.06)
Dangerous/unpredictable	1.00 (0.80, 1.15)	1.01 (0.77, 1.33)	0.97 (0.76, 1.26)
Social distance	0.96 (0.75, 1.20)	1.25 (0.91, 1.39)	1.33 (0.97, 1.75)

DISCUSSION

The current study sought to explore the relationships between measures of mental illness stigma and various associated factors (i.e., socio-demographic factors, measure of psychological distress), as well as to determine the factors associated with MHL (i.e., recognition of mental illness, knowledge of causes) among population of central Punjab. The study revealed correlations between several personal stigma subscales and participants' levels of psychological distress as measured by K10, years of education completed, age and gender. Specifically, there was a strong positive correlation between K10 scale and 'Dangerous/unpredictable' sub- scale, indicating that an increase in the level of psychological distress was associated with increased likelihood of holding the belief that someone with mental problems is dangerous or unpredictable. A recent study among rural women in Central Punjab found that participants with severe psychological distress had higher scores for stigma, and emphasized that perceived stigma can by the current states of mental or emotional health.[22] Similarly, a strong negative correlation was observed between years of education completed and 'Dangerous/ unpredictable' subscale, indicating lower levels of personal stigma among those with higher education. This is in line with prior studies that have also reported that higher education contributes to a more positive attitude towards mental illness.

The current study revealed significant gender differences, where rural females were found to have higher levels of stigmatizing attitudes towards mental illness as compared to urban females. A systematic review on mental illness stigma in the central Punjab also noted that urban females generally have more positive attitudes towards mental illness than rural females. In the current study, rural males had higher scores than urban male for 'I-would-not-tell-anyone' subscale, indicating that they were more likely to hold the belief that it is better not to tell others if they had a mental health problem.

There are a number of plausible explanations for this study finding. Mental illness is particularly stigmatizing for women in rural communities who are seen as the "honor" of the family.[23] Especially when others become aware that a woman is utilizing mental health services, it can negatively impact marriage prospects or bring marital discord, as well as cause stigma and shame to the family.[23] As compared to men, a woman's family may monitor her more closely and increase their control over her when a woman has mental illness. It is also common for rural women to experience shame and embarrassment about seeking help regarding mental illness outside of her family. Therefore, the perceived implications of a woman having a mental illness in the rural female may have influenced women's attitudes toward mental illness in the current study.

A unit increase in age was associated with a decrease in 'Dangerous/unpredictable' score in the current study, which implied that younger people were more likely to hold the belief that someone with mental problems is dangerous or unpredictable as compared to those with older age. Age differences in the 'Dangerous/ unpredictable' subscale were also reported for the general Punjab adult population, where those aged 30–59 years had the lowest score followed by those aged ≥ 60 years and <30 years. A prior study conducted in South Sudan found that low level of education and familiarity with mental illness increased the likelihood of perceiving individuals with mental illness as dangerous, which may be some of the factors associated with younger age.[24] However, prior studies among a sample of the Slovak population and Catalan population have found that older age is associated with higher levels of stigmatizing attitudes towards mental illness. These differences could be attributed to the use of vignette in this study, which

allowed for a precise measure of personal stigma towards the character portrayed (i.e., Gul Khan/Sara Bibi) rather than a measurement of general stigmatizing attitudes towards mental illness as an abstract concept.

In the current study, higher odds of rating "Punishment from God" as a likely cause of developing mental illness was observed among females than males. While consistent with previous studies, our findings failed to retain significance after adjustment for multiple testing highlighting the need for future research with larger sample size to confirm the role of gender and length of resettlement in holding stigmatizing beliefs. Given stigmatizing beliefs such as mental illness is God's punishment and/or God's will as noted in a recent systematic review, along with the belief that mental illness is related to personal weakness, our findings provide additional rationale for the need for stigma reduction interventions in Central Punjab population.

Study limitations and strengths

The limitations of the current study should be noted. These include the cross-sectional design of the study which does not allow for causal explanations, the use of self-report measures of general psychological distress, and the use of multiple hypothesis tests. The sampling technique meant that only those individuals who were most interested in participating in the MHL Program were selected. Similarly, using a vignette based on PTSD meant that only the recognition and attitudes towards PTSD were evaluated. Utilizing multiple mental illness vignettes in future studies could alleviate this limitation. It should also be noted that the majority of the participants in this study were from Mirpur, Jhelum and Rawalpindi, and the study findings may not be general sable to all people of central Punjab. The study findings should be considered in light of limitations including the exploratory nature of the study and the small sample size(n=80).Nonetheless, this study presents interesting findings and a starting point, particularly in light of the scarce research conducted to explore factors associated with mental illness stigma in central punjab. Future research with a larger sample size should be undertaken to enable the confirmation of the study findings. Not withstanding these limitations, there were several strengths that should be mentioned. Firstly, one of the strengths of the current study was the use of a culturally adapted and valid vignette describing a fictional character with PTSD thus ensuring cultural sensitivity. Furthermore, participants were recruited from single tertiary care hospital. This approach not only facilitated proportional. heterogeneous data collection but ensured as best an accurate representation of the central Punjab.

Our findings regarding the stigmatizing attitudes and belief shared by central Punjab populations have important service implications. Most notably it is important to design stigma reduction interventions for the central Punjab people in early stage of PSTD / other mental illness in order to address their mental health needs and facilitate the uptake of mental health services. There is a need for more integrated and culturally informed services for these vulnerable population groups, and it is imperative to develop effective interventions to facilitate optimal adjustment for local population, particularly those with pre-existing mental health conditions and other related factors such as poor levels of MHL and high levels of mental illness stigma. Moreover, rural population communities often utilize avenues other than professional mental health services while seeking help for mental health difficulties, including religious and community leaders, community networks and culturally specific services. Therefore, it is essential to recognize the value of these informal sources in not only providing mental healthcare but being an entry point where stigma reduction interventions may be delivered.

CONCLUSIONS

In summary, the study demonstrated associations between participants' levels of psychological distress, years of education, age and gender and measures of personal stigma. While exploratory in nature with a small sample size, the study findings can be considered as a starting point to further elucidating our understanding of mental illness related stigma and a preliminary step in the development of targeted stigma reduction initiatives for population of central Punjab.

List of abbreviations

PSTD	Post-Traumatic Stress Disorder
MHL	Mental Health Literacy
K10	Kessler Psychological Distress Scale
DSM – 5	Diagnostic and Statistical Manual of Mental Disorders – Fifth Edition

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