

Community Screening for Psychiatric Morbidity in Four Remote Valleys of Hindu Kush and Karakoram Regions of Pakistan

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ABSTRACT

Objective: To find out the frequency of psychiatric morbidity in patients reporting to general medical camps in the Hindu Kush and Karakoram ranges of Pakistan.

Study Design: A cross-sectional study.

Place and Duration of Study: Four different valleys of the region, with the Psychiatry Department, Combined Military Hospital, Gilgit as the base, from August 2015 to December 2016.

Methodology: Consenting adults of either gender, reporting to medical camps for various health related issues were administered Bradford Somatic Inventory 21 (BSI 21) and Self Report Questionnaire (SRQ). Non-parametric statistical techniques including Mann-Whitney test, Kruskal-Wallis test, and Spearman correlation, along with median and inter quartile range, were used to analyse data.

Results: Out of a total of 478 (52.1% females) respondents, half [n=234 (48.9%) on BSI and n=243 (50.8%) on SRQ] reported positive psychiatric morbidity. Inter-valley differences were significant (BSI, $\chi^2=49.1$, $p < .001$; SRQ, $\chi^2=66.5$, $p < .001$). Females reported higher levels of psychiatric morbidity measured by BSI ($p < .001$) and SRQ ($p < .001$), as compared to males. Participants' occupation was significantly associated (BSI; $\chi^2=23.1$, SRQ; $\chi^2=35.3$, $p < .001$) while their age was not significantly associated (BSI, $r=-.06$, $p > .05$; SRQ, $r=-.09$, $p > .05$) with their psychiatric morbidity.

Conclusion: Psychiatric morbidity was prevalent in the population studied, which may go unrecognized, overlooked, or mistreated by the locally available medical resources. There is a huge need for mental health services in these areas.

Key Words: *Psychiatry, Morbidity, Valleys, Gilgit-Baltistan, Pakistan, Hindu Kush, Karakoram, Bradford somatic inventory 21, Self-reported questionnaire.*

INTRODUCTION

Sporadic studies have hinted towards higher than average psychiatric morbidity in people dwelling at high altitudes (HA).¹ Exposure to hypobaric hypoxic conditions had been known to induce 'negative' mood states.² Long term changes in human neurobehavioral functions are known to exist even after short exposures to HA.³ Common mental disorders, like anxiety, are known to precipitate even in battle hardened soldiers on ascent to HA.⁴ These effects were noted in individuals ascending to higher places temporarily, for duty, or research purpose. Living at HA was found to be associated with anxiety and depression symptoms in a Nepali study.⁵

Individuals who migrated to higher altitudes and lived there for one to five years had their mood disorders assessed and found worsened, along with the

deterioration in cognitive functions.⁶ This added on to the hypothesis that the individuals dwelling on HA of Gilgit-Baltistan (GB) had higher psychiatric morbidity.

The far-flung valleys of GB province of Pakistan remained largely unexplored due to the difficult terrain, cold weather and farther distance. Negligible data on psychiatric issues was present from this region. The altitude above mean sea level (AMSL) of these valleys was higher than the plains, as they lie in the Hindu Kush and Karakoram mountain ranges, and may be termed as HA.⁷ The state of Utah / USA, also known as the suicide belt, being a HA state, is also known to have the highest psychiatric illness rate in the country.⁸

The objective of this study was to screen psychiatric cases in four far-flung valleys of the region, namely: Phunder, Hundar, Chapursan, and Tangir; and to tabulate the most common symptoms and compare the genders.

METHODOLOGY

This was a cross-sectional survey, which took place from August 2015 to December 2016, using the Psychiatry Department, Combined Military Hospital, Gilgit as the 'base camp'. The above mentioned valleys were visited along with medical camps. Ethical approval was obtained from Institutional Ethical Review Committee,

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Combined Military Hospital, Gilgit. Participants were recruited from amongst the individuals reporting to these camps for their health issues after explaining the purpose of the study and confidentiality issues. The health issues included all types of acute to chronic general medical conditions. The sample was acquired through convenient purposive sampling technique, therefore it may resemble that of a primary healthcare population. The volunteers included consenting adults of either gender who were natives of the valleys of Phundar, Hundar, Chapursan and Tangir. These valleys were at an altitude of 11482, 8906, 16158 and 4653 feet AMSL, and at a ground distance of 168, 173, 265 and 187 kilometers from Gilgit, respectively. Individuals who were unable to read or write, those with cognitive deficits, and the ones that did not consent, were excluded.

Basic demographic data including age, gender, and profession was accounted for in the first part of the forms. In the second part, the volunteers were given two self-reporting instruments, Bradford Somatic Inventory-21 (BSI),⁹ and the Self Report Questionnaire (SRQ).¹⁰ Two translated and validated instruments were available in Urdu. It took around 10 to 15 minutes for each participant to fill the forms.

BSI was designed to screen underlying anxiety and depressive illness by their somatic manifestation in nine different domains: head, chest, abdomen, limbs, back, eyes, ears, genitourinary, and the whole body. A score of 14 was taken as the cutoff for possible psychiatric disorder. SRQ contained 20 items as asked about the 'mental distress' experienced by the subjects in the last one month, in terms of anxiety, depression and somatic symptoms. A score of 8 was taken as the cutoff for possible psychiatric disorder.

Descriptive statistical techniques (median and inter-quartile range) were used to summarise the collected data and inferential statistical techniques, Mann-Whitney test for gender comparison, Kruskal-Wallis test for inter-valley comparison and role of occupation, and Spearman correlation to assess the relationship between age and psychiatric disorders were used for hypothesis testing. The level of significance was considered significant at ($p \leq 0.05$).

RESULTS

A total of 644 (347, 53.9% females) community participants; 302 (46.9%) from Phundar, 158 (24.5%) from Hundar, 118 (18.3%) from Chapursan, and 66 (10.2%) from Tangir were included. After excluding the outliers, the final analysis was performed on 478 (249, 52.1% females) participants. Their age ranged from 18-95 years (Mean=38.8 \pm 16.2 years). Regarding occupation: 130 (27.2%) were unemployed, 76 (15.9) farmers, 101 (21.1%) housewives, 44 (9.2%) students,

21 (4.4%) teachers, 4 (.8%) policemen, 23 (4.8%) military personnel, and 62 (12.9%) reported miscellaneous occupations, while 17 (3.5%) did not report their occupation.

Results revealed that around half of participants reported psychiatric morbidity [n=234 (48.9%) on BSI and n=243 (50.8%) on SRQ]. Inter-valley comparison results indicated that (BSI: $\chi^2=49.1$, SRQ: $\chi^2=66.6$, $p<.001$) people from different valleys reported statistically different levels of psychiatric comorbidity (Table I). Descriptive analysis revealed that people from Tangir (BSI: Median=22.0, IQR=2.0, SRQ: Median=10.5, IQR=2.2) reported higher levels of psychiatric morbidity while people from Hundar (BSI; Median=8.0, IQR=14.0, SRQ; Median=2.0, IQR= 8.0) reported lowest level of psychiatric morbidity (Table I). Regarding gender: females (BSI; Median=18.0, IQR=16.0, SRQ; Median=9.0, IQR=8.0) reported higher levels of psychiatric morbidity as compared to males (BSI; Median=10.0, IQR=17.0, SRQ; Median=6.0, IQR= 8.0, $p <.001$) while participants' age (BSI; $r = -.06$, SRQ; $r = -.09$ $p >.05$) was not found to be related to their reported morbidity.

Kruskall-Wallis Test (BSI; $\chi^2=23.1$, SRQ; $\chi^2=35.3$, $p <.001$) revealed that participants' occupation significantly influenced their reported psychiatric symptoms. Descriptive analysis revealed that housewives (Median=10.0, IQR=15.0) reported highest level of psychiatric morbidity

Table I: Valley-wise comparison on BSI and SRQ by using Kruskal-Wallis Test (N=478).

Scale	Valley	Median	IQR	χ^2	p
BSI	Phundar	12.0	19.0	49.1	.001
	Hundar	8.0	14.0		
	Chapursan	17.0	17.0		
	Tangir	22.0	2.0		
SRQ	Phundar	7.0	8.0	66.5	.001
	Hundar	2.0	8.0		
	Chapursan	10.0	9.0		
	Tangir	10.50	2.2		

Table II: Occupation-wise comparison on BSI and SRQ by using Kruskal-Wallis Test (N=462).

Scale	Valley	Median	IQR	χ^2	p
BSI	Unemployed	12.0	20.0	23.1	.001
	Farmers	10.5	17.7		
	Housewives	18.0	15.5		
	Students	8.0	17.2		
	Teachers	17.0	15.0		
	Military	4.0	12.0		
	Others	18.5	14.7		
SRQ	Unemployed	7.0	7.0	35.3	.001
	Farmers	6.0	8.0		
	Housewives	10.0	9.5		
	Students	4.0	9.0		
	Teachers	8.0	8.0		
	Military	2.0	6.0		
	Others	9.0	9.7		

on SRQ and 'miscellaneous' occupation group reported highest level on BSI (Median=18.5, IQR=14.7) while military personnel exhibited lowest level of psychiatric morbidity on both scales (BSI; Median=4.0, IQR=12.0, SRQ; Median=2, IQR=6.0), Table II.

The most frequently occurring symptom in both scales was 'headache'. The second most frequent symptom, in SRQ was 'indigestion'; and 'feeling heaviness over the head' on BSI, followed by 'getting tired easily' on SRQ; and 'pain and tension in neck, shoulders', and 'weakness' on BSI. In relation to the altitude, the highest occurring symptoms on BSI were 'headache', 'heavy headedness', and 'indigestion', at 11482 and 8906, 16158, and 4653 feet AMSL, respectively. On SRQ, headache and easily-tired, headache; and uncomfortable feelings in stomach at 11482, 8906, 16158, and 4653 feet AMSL, respectively.

On SRQ analysis (n=93, 19.4%) men and (n=150, 31.3%) women screened positive, compared to (n=89, 18.6%) men and (n=145, 30.3%) women on BSI. On average, positive cases on both scales were: n=182 (19%) men and n= 295 (30.8%) women.

DISCUSSION

Both BSI and SRQ revealed that half of the research participants reported significantly high levels of psychiatric symptoms. All the valleys of GB lie at HA. Dwellers of HA had been studied in other parts of the world, too, regarding the incidence of psychiatric morbidity. Many studies have found a significant association between HA and psychiatric morbidities like anxiety and depressive disorders, similar to our results.⁵

Pakistani rates of psychiatric symptoms were well within the previously reported national figures. Compared to the present findings of 49.8% having psychiatric symptoms on screening, the past studies reported 43.1% in remote Sindh villages,¹¹ and 66% women and 25% men in rural Punjab,¹² 25% women and 10% men in urban Punjab,¹³ and 46% women and 15% men in Hindu Kush/Chitral.¹⁴ The only review article available on the subject gave the mean overall prevalence of 29-66% for women and 10-33% for men in the Pakistani population.¹⁵ The results lie within these ranges. Najam and Hussain focusing just on the gender differences, have also reported similar findings in the same context,¹⁶ where women reported lower level of mental health as compared to men, from this region.

The present findings differed from valley to valley in the same region of GB. This was a pattern seen in past studies elsewhere too.¹⁷ However, the distance from main cities and heights that differed in all the four valleys, were findings that could not be substantiated by any other previous study. Additionally, the present participants' gender and occupation influenced their psychiatric morbidity. This was similar to a past study in

Chitral in almost similar settings by using same instrument, which stated a figure of 46% of the women suffering from mental disorders.¹⁴ Regarding employment status, our findings are in concordance with previous studies proclaiming a 'two-way causality' between psychiatric ailments and employment status.¹⁸ However, respondents' age was not found to be related with their reported psychiatric symptoms. This was in contradiction to previous research findings; whereas, in Chitral, the BSI scores in a similar study increased till the age of 50 years and then declined.¹⁴

Due to the constraints of time, resources, and the geographical difficulties, the authors did not indulge into interviewing psychiatric individuals that screened positive for psychiatric symptoms.

This is one of the very few scientific researches that attended to the presence of psychiatric morbidity in GB. These efforts may well be the beginning of an effort to encourage the development of psychiatric services, responsiveness, and research in this geographically remote but important area of Pakistan.

The sample for this research included four areas lying in three major districts of Gilgit-Baltistan, thus the results may not represent the entire province. A comparison has, however, been furnished with other national data, which has shown to be harmonious. These findings may be used as baseline figures to evaluate the intensity of the population's mental health after the China Pakistan Economic Corridor (CPEC) is completed, so as to evaluate the psychological impact of CPEC.

The chief limitation of this study was the mental health instruments utilised, which were self-administered and could only be done on already literate individuals from the population. This may limit its generalisability.

CONCLUSION

Around 50% of respondents in the far-flung valleys of GB reported significant levels of psychiatric signs and symptoms. Residents' living valley and occupation also influenced their psychiatric symptoms.

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