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Psychological dynamics of pandemic resilience: a tale of two cultures

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ABSTRACT

The present work endeavours to explore the experiences of university-level students from Pakistan and Nepal after the COVID-19 outbreak. A comprehensive electronic survey was carried out utilising a meticulous cluster sampling technique encompassing two distinct populations, i.e. Pakistan and Nepal, during the period extending from September 2022 to January 2023. A total of 2496 participants completed the questionnaire (Pakistani population: 55.45% and Nepalese population: 44.55%). We utilised the Mental Health Continuum–Short Form (MHC-SF), Pittsburgh Sleep Quality Index (PSQI), feeling of loneliness (UCLA), interdependent happy scale (IHS), and fear of COVID-19 scale (FCV-19S). Notably, a significant intercultural disparity was observed, particularly concerning the level of COVID-19 fear which was higher among the Nepalese population. However, this particular variable did not demonstrate any significant associations with other variables, except for the social dimension of MHC-SF. There was a negative correlation observed between this variable and IHS within the Pakistani population. Irrespective of the varying degrees of apprehension towards COVID-19 within the two distinct cultural contexts, there exists a significant positive correlation between the assessed psychological assets and individual well-being, as well as the resumption of regular activities after the outbreak.

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1. Introduction

Amidst the global coronavirus disease 2019 (COVID-19) pandemic, the patterns of societal engagement underwent a significant transformation owing to the unprecedentedly rapid spread of the virus Jamali et al. (2020). To curtail the dissemination of the disease, numerous governments globally implemented stringent measures to restrict societal engagements. The implementation of lockdowns, quarantines, and societal distancing measures has effectively curtailed the direct interconnections among individuals O'Sullivan et al. (2021). The implementation of social measures, although justified, has resulted in adverse repercussions for the individuals who were required to comply with them. The enforcement of social isolation and alterations to daily routines have detrimentally impacted the well-being and level of loneliness experienced by those subjected to such restrictions. Notably, an increase in feelings of loneliness has emerged as a significant issue faced by the majority of individuals who are confined to their residences and lack regular interpersonal interactions Latikka et al. (2022). Communication with other individuals was limited due to the compulsory utilisation of facial masks and adherence to various protective measures implemented to mitigate the spread of the virus, which encompassed limitations on moving outside living quarters, self-isolation mandates, and the practice of maintaining a certain physical distance. Social contact regulations were implemented by all nations to regulate social interactions, resulting in a restriction of varying magnitudes that hindered the inherent ease and impromptu nature of interpersonal connections (Rehman et al., 2022 Shah et al., 2022).

The durations of lockdown and post-lockdown have resulted in the emergence of fear patterns related to COVID-19, which vary based on temporal and demographic factors. Of particular concern are the youth and elderly populations, who are particularly vulnerable when confronted with sudden and unforeseen drastic events (Baumann et al., 2021 Casalone et al., 2023). The implementation of lockdown measures, intended to limit the mobility of the population to contain the spread of the novel COVID-19, has contributed to a worldwide mental health crisis. Following the cessation of lockdown measures, a noteworthy escalation in suicidal tendencies and psychomotor restiveness was detected, accompanied by a decline in the occurrence of behavioural disorders (Baumann et al., 2021; Rehman et al., 2023). This phenomenon can be attributed to the observed impairment in cultivating interpersonal connections caused by the COVID-19 outbreak, which prominently led to feelings of solitude and instances of societal detachment, as substantiated by existing evidence (Voltmer et al., 2021). Gaining insights into the factors contributing to heightened levels of loneliness during the outbreak is of utmost significance, given that loneliness serves as a noteworthy predictor for the emergence or intensity of depressive and anxiety

symptoms. Extant literature has underscored the detrimental impact of increased loneliness on university students as well. Moreover, research carried out on the Pakistani populace has corroborated these associations, further underscoring their relevance.

On 26 February 2020, Pakistan officially declared a state of the outbreak, implementing widespread restrictions on movement and the functioning of commercial, service, and catering establishments (Waris et al., 2020). Additionally, individuals who had potentially been in contact with the virus were subjected to mandatory quarantine. These measures, resembling the global response to the pandemic, have had significant ramifications on the lives of the population at large (Mukhtar, 2020). The epidemic has exerted profound impacts on the social and psychological well-being of numerous individuals (Rana et al., 2020; Rehman et al., 2022). The presence of the virus within an individual or one's family unit, coupled with concerns for the well-being of cherished relatives, the economic repercussions stemming from the halt in activities, and the challenges in obtaining medical assistance have collectively exerted a detrimental influence on individuals (Subba et al., 2020). The substantiated instances of infection and the significantly elevated rates of mortality attributed to the virus have played a consequential role in facilitating the onset of mental health issues (Paz et al., 2022 Shoib et al., 2021). The decline in the quality of life and social interactions has become evident. The COVID-19 outbreak brought forth several inconveniences and challenges that should not be regarded as insignificant (Mia & Griffiths, 2021). Amongst them, the mandatory usage of masks stands out as a notable factor that heightened adverse emotions and contributed to the deterioration of individuals' mental well-being. The severity and duration of the imposed restrictions were found to have unique impacts on the prevalence of depression, stress, and anxiety symptoms (Sweileh, 2021). The implementation of stringent measures exhibited a correlation with the exacerbation of manifestations of depression, whereas the implementation of lenient measures resulted in a heightened state of anxiety. Concurrently, the adoption of temporary restrictions was found to be associated with elevated levels of stress, unquestionably influencing individuals' overall welfare (Atreya et al., 2022 Dangal & Bajracharya, 2020).

The subject of mental health has garnered increasingly greater attention in recent years (Shin & Johnson, 1978). The concept of good health encompasses both objective and subjective elements, which are evaluated according to individual values. Wellness is also commonly equated to happiness and connected to a greater abundance of positive emotions compared to negative emotions. This particular definition places significance on the pleasurable emotional sensations experienced by an individual at a specific moment in their life or as a generalised predisposition (Ryff & Keyes, 1995). Undoubtedly, one's sense of wellness is intricately tied to their overall contentment with life

and the cultural background one belongs to. Numerous cross-cultural investigations have revealed variations in individuals' life satisfaction and wellness across diverse ethnicities and ethnic groups (Diener, 1984 Diener et al., 1995). Moreover, these discrepancies in wellness among territories demonstrate a positive correlation with the average income levels present within each respective nation. This observation can be attributed to the tendency for affluent nations to possess elevated social indicators, encompassing facets such as individuals' privileges, equality of opportunities, longevity, and independence (Diener & Diener, 1995).

The subjective perception of happiness exhibits variances across different cultural settings. The construct of happiness not only exhibits cultural variation but also manifests in divergent experiences or behaviours (Bhamani et al., 2022). The importance of measuring and comparing happiness across cultures cannot be overstated in academic discussions. Cultural studies have indicated that individuals originating from the Asian cultural sphere evaluate their present state of happiness by incorporating their lifelong challenges and fluctuations (Hitokoto & Takahashi, 2021 Krys et al., 2023). If individuals are undergoing a challenging phase, yet anticipate amelioration in the imminent future, their subjective well-being remains unaffected. Individuals within the Pakistani and Nepalese cultural sphere often perceive negative experiences as integral parts of their present state of happiness (Charan et al., 2020). The notion of interdependent happiness is rooted in these nations' perspectives on happiness, in which self-fulfilment plays a lesser role compared to the emotions and encounters of individuals in one's social environment (Sabir et al., 2019). Conversely, individualistic cultures tend to link these experiences with individual accomplishments and the realisation of one's full potential. Recently, there has been a significant increase in the number of people using mobile devices for various purposes. This rise in mobile device usage has brought about numerous positive effects on individuals and society as a whole. Additionally, the development and widespread adoption of mobile apps have played a crucial role in facilitating these positive impacts. In this essay, we will explore the various benefits of mobile device usage and the role that mobile apps have played in promoting these advantages (Uchida & Kitayama, 2009).

An optimal sleep duration plays a pivotal role in influencing an individual's ability to efficiently engage in day-to-day tasks and maintain cognitive functioning at an optimal level (Buysse et al., 1989). During the epidemic, students were compelled to undertake lifestyle modifications and confronted a multitude of challenges, such as adapting to an altered teaching and learning framework and grappling with the loss of interpersonal connections, among others. This may potentially result in a deleterious influence on individuals' sleep quality, as well as exacerbate the prevalence of depression, anxiety, and stress (Altena et al., 2020; Cao et al., 2020). The acquisition of

high-quality sleep is imperative for the desirable neurocognitive and psycho-motor competence, in addition to achieving favourable physical and mental well-being. Consequently, an inadequate quality of sleep could result in attention-related challenges and subpar academic achievement. A positive correlation has been observed between inadequate sleep quality and various parameters, encompassing psychological facets, physical exertion, and lifestyle components, alongside persistent ailments (Lemma et al., 2012).

Extended periods of mandated seclusion have the potential to result in feel-ings of solitude, thereby exerting detrimental effects on individuals' well-being and overall level of contentment, at both a personal and societal level (Abbass et al., 2023; Regmi et al., 2022). It is worth noting that social isolation catalyzes numerous ailments, while concurrently exacerbating the likelihood of prema-ture death. The emotional state characterised by a profound sense of solitude is a widely prevalent outcome stemming from coerced seclusion (Sahni & Sharma, 2020). The implementation of social distancing as a primary strategy in curbing the transmission of COVID-19 resulted in a significant increase in social isolation among individuals compared to pre-pandemic levels. The experience of social and emotional loneliness was particularly pronounced among women, those who already faced heightened levels of social isolation. Moreover, a study conducted on among adults revealed that the amount of stress caused by COVID-19 was a significant predictor of both resilience and burnout related to the virus. The findings of the study revealed that resilience played a significant role in predicting COVID-19 burnout (Yıldırım & Solmaz, 2022). Moreover, a partial mediating effect of resilience was observed in the relationship between COVID-19 burnout and associated- mental health issues.

1.1. The present study

The rationale behind this endeavour is derived from the necessity to under-stand and analyze the post-COVID-19 experiences of university-level students in different cultural environments, specifically Pakistan and Nepal. In light of the pandemic's wide-ranging impact on the global community, there arose a pressing need to examine how individuals from diverse backgrounds coped with its repercussions, particularly about mental well-being, quality of sleep, feelings of isolation, interdependent happiness, and fears related to the COVID-19. The deliberate selection of Pakistan and Nepal as study popu-lations was based on the intention to encompass a wide range of perspec-tives and responses that are influenced by unique cultural, societal, and geographical factors. This research utilised a comprehensive electronic survey and rigorous sampling methods to collect detailed insights into the psychological effects of the pandemic on graduate students. The selection of particular assessment instruments, such as the Mental Health Conti-nuum–Short Form (MHC-SF), Pittsburgh Sleep Quality Index (PSQI), feeling

of loneliness (UCLA), interdependent happy scale (HIS), and fear of COVID-19 scale (FCV-19S), was based on the requirement for standardised and validated measures to comprehensively capture crucial aspects of mental health and reactions to the ongoing pandemic. The apparent intercultural variances, specifically in the degree of apprehension towards COVID-19, have prompted questions about the impact of cultural determinants on individuals' cognitions and reactions to a collective global crisis. The justification for this research is rooted in its aim to enhance the thorough understanding of how cultural subtleties influence psychological reactions, consequently offering insights into developing approaches to facilitate the well-being of undergraduate students following the COVID-19 pandemic.

2. Material and methods

2.1. Participants and procedure

The study design was descriptive, non-experimental, and cross-sectional. Both surveys were carried out electronically via a structured questionnaire from September 2022 to January 2023. After willingly agreeing to take part in the research, the participants were promptly furnished with a direct electronic link to access the questionnaires with detailed guidelines given at the commencement and before each question. The official national language of Pakistan is English, and the questionnaire administered to the Pakistani sample was in the English language. The questionnaire distributed to Nepalese participants was translated into their native language, Nepali, in consideration of their linguistic background. The questionnaire underwent translation into the Nepalese language through the utilisation of the forward and backward translation methods. The participants were not defined with a specified duration of time; however, they were made aware of the anticipated time requirement. The recruitment of participants for both categories was facilitated with support from academics associated with the respective universities. Throughout the enrolment procedure, the participants were provided with comprehensive information and effective communication about the study's objectives and adherence to ethics. Furthermore, within the confines of the study mentioned in the provided source, participants were duly acquainted with the study's objectives, assured of the preservation of their anonymity, and made aware of their prerogative to withdraw from participation at any point without facing any adverse ramifications.

2.2. Eligibility criteria

The inclusion criteria for participants encompassed enrolment as graduate students, being aged 18 years or above, absence of diagnosed mental

illness, and no clinical signs of insomnia. The responses were excluded if the ratio of missing information exceeded 10%. A dataset comprising 2,496 responses was received, with 55.45% (1,112) identifying as Pakistani and 44.55% (1,384) as Nepalese.

2.3 Study sample characteristics

The cohort comprised individuals who were enrolled as graduate students. The aforementioned survey was directed towards university students residing in specifically urban areas using a stratified cluster sampling technique. The objective of the investigation was to enlist individuals who resided within main urban regions throughout the COVID-19 outbreak, irrespective of their native origins. The student's major and geographical background were not considered in our analysis. In the sampled cohort from Pakistan ($n_{PK} = 1384$), a predominant proportion of 68% consisted of female students. The studied Nepali sample, comprised of $n_{NP} = 1112$ individuals, female respondents constituted 71.13% of the total. The participants' average age was found to be 23.35, while the standard deviation was reported to be 1.23 for the Pakistani population, whereas for the Nepalese population, the mean was estimated to be 24.07 with a standard deviation of 1.17.

2.4. Instruments

2.4.1. Mental health

The initial iteration of the Mental Health Continuum–Short Form (MHC-SF), comprising 14 items, serves as a self-administered survey instrument designed to assess three fundamental dimensions of subjective well-being, which are emotional (comprising 3 items), psychological (comprising 6 items), and social (comprising 5 items) (Keyes et al., 2008). Participants were asked to evaluate the occurrence of various emotional states experienced during the preceding month using a Likert scale consisting of six points, ranging from the absence of an emotional state (0) to its occurrence every day (5). The participants retrospectively reflected upon their experiences during the previous month and provided ratings expressing the frequency of various emotional states.

2.4.2. Loneliness

Loneliness was assessed utilising the UCLA three-item loneliness Scale (Hughes et al., 2004). Participants from both the sample populations were surveyed using a three-point Likert scale to measure their sense of loneliness, with a higher score indicating a stronger feeling of loneliness.

2.4.3. The Pittsburgh sleep quality index (PSQI)

The assessment of sleep quality was conducted utilising the PSQI, which comprehensively assesses sleep quality through the examination of 19 indicators categorised into seven distinct dimensions (Buysse et al., 1989). The evaluated dimensions consist of subjective sleep disturbance, sleep quality, use of sleeping medication, sleep latency, sleep duration, sleep efficiency, and daytime dysfunction. In this study, a Likert scale with 4 levels was employed to assign scores ranging from 0 to 3 for each dimension, resulting in a total score between 0 and 21. A higher score on this scale indicates poorer sleep quality among the participants.

2.4.4. Interdependent happiness

The nine-item Interdependent Happiness Scale is a self-report of interpersonal happiness that focuses on three dimensions: relationship-oriented happiness, quiescent happiness, and ordinary happiness (Hitokoto & Uchida, 2015). Study participants responded on a 5-point Likert scale ranging from 1: strongly disagree – 5: strongly agree. The higher average score is indicative of the higher level of interdependent happiness.

2.4.5. Fear Related to COVID-19

The assessment of students' anxiety about the outbreak of COVID-19 was conducted in both surveyed samples through the utilisation of the Fear of COVID-19 Scale (FCV-19S) (Ahorsu et al., 2020). The collective FCV-19S sum scores exhibit a range spanning from 7 to 35, wherein a higher aggregate score corresponds to a heightened level of apprehension towards COVID-19. The absence of an established authoritative cutoff for the FCV-19S scale prompted us to adopt an FCV-19S score of ≥ 21 as the designated threshold for COVID-19 fear.

2.5. Statistical analyses

The statistical analyses were executed utilising SPSS (v26) software with a significance level of p-value less than 0.05. The gathered information was initially evaluated to identify those that were suitable for parametric tests. Parametric tests, such as t-tests and correlation analysis (Pearson's), were employed to assess the survey data and perform comparisons between groups. Likewise, the non-parametric statistics were subjected to non-normal data, as required. The statistical analysis employed to ascertain the importance of disparities between associations within the samples entailed the utilisation of Fisher's Z-test.

3. Results

Initially, Harman's single-factor test was employed to estimate the variation in common method bias among the measurement scales. The results indicated that the initial factor accounted for 27.87% of the variance, falling below the established 40% threshold. This suggests that there is no evidence of common method deviation among the items included in the questionnaire.

The subsequent procedure involved assessing the reliability and validity of the measurement items incorporated in the questionnaire, to attain reliable and accurate results. In addition, an assessment was conducted to evaluate the construct validity and model adequacy of the study variables. The findings indicated a favourable degree of reliability and validity of the measurement tools (Table 1).

To ascertain the disparities between the populations under investigation, an initial comparison was conducted on the average values of the selected variables. Table 2 presents the descriptive statistics, accompanied by Cohen's d effect sizes. The conducted analysis revealed a statistically significant disparity regarding the degree of perceived COVID-19 fear between the examined cohorts of individuals from Pakistan and Nepal. In the population of Nepalis, the observed level was found to be twice as high compared to the population of Pakistanis. Remarkably, subsequent to the FCV-19S construct, sleep quality exhibited a higher PSQI level among the Nepali population, as opposed to the Pakistani population. Within the mental health continuum, the psychological and social wellness scales proved effective in distinguishing between disparate populations. The present study found that the Pakistani sample demonstrated greater levels of psychological wellness as compared to the Nepali population. Conversely, when assessing social wellness, the Nepali

Table 1. Reliability and validity analysis.

	MHC-SF	UCLA	PSQI	IHS	FCV-19S	Threshold
n_{PK}						
Cronbach's alpha	0.85	0.81	0.82	0.86	0.88	≥ 0.7
AVE	0.59	0.65	0.58	0.64	0.70	>0.5
CFI	0.97	0.98	0.97	0.96	0.96	≥ 0.95
TLI	0.96	0.97	0.96	0.96	0.97	≥ 0.95
RMSEA	0.05	0.04	0.04	0.03	0.03	<0.08
SRMR	0.04	0.03	0.05	0.04	0.04	<0.08
$\chi 2/df$	1.23	2.31	1.89	2.06	1.76	<3
n_{NP}						
Cronbach's alpha	0.84	0.79	0.87	0.89	0.86	≥ 0.7
AVE	0.57	0.61	0.63	0.65	0.69	>0.5
CFI	0.98	0.98	0.96	0.97	0.97	≥ 0.95
TLI	0.98	0.97	0.97	0.98	0.98	≥ 0.95
RMSEA	0.05	0.04	0.06	0.05	0.06	<0.08
SRMR	0.04	0.03	0.05	0.03	0.04	<0.08
$\chi 2/df$	1.43	2.16	1.65	1.89	1.55	<3

Note: AVE: average variance extracted, CFI: comparative fit index, TLI: Tuckey-Lewis index, RMSEA: root mean square error of approximation, SRMR: standardised root mean residual

Table 2. Descriptive statistics and effect size analysis.

	S_P		S_N		
	$\bar{X}$	SD	$\bar{X}$	SD	d_{Cohen}
MHC-SF$_E$	10.88	2.16	10.46	2.73	0.17
MHC-SF$_S$	15.21	4.29	16.61	4.96	0.30
MHC-SF$_{PSY}$	23.15	5.23	21.37	5.83	0.32
UCLA	2.91	4.31	3.67	4.87	0.15
PSQI	10.21	3.26	13.46	4.15	0.88
IHS	28.67	5.17	29.45	3.79	0.17
FCV-19S	13.72	3.41	19.56	7.69	1.02

Note: S_P: Sample from Pakistan, S_N: Sample from Nepal

population displayed higher degrees in comparison to the Pakistani popu-
lation. The magnitude of the differences assessed using Cohen's d indicated
that the effect size was highest for perceived COVID-19 fear, followed by
sleep quality. These effect sizes can be categorised as large. While the effect
size for the remaining variables exhibited minimal magnitude.

Table 3 displays the results of Pearson's correlation analysis examining
the interrelationships of the study variables within the Pakistani popu-
lation. The results of the study revealed significant statistical correlations
among all dimensions of MHC-SF and IHS. There was a moderate to
weak negative correlation between UCLA and all three dimensions of the
MHC-SF. The results indicate a positive correlation between IHS and all
three dimensions of MHC-SF. In contrast, UCLA demonstrated a negative
correlation with IHS. Similarly, it was observed that the age distribution
of the participants in the Pakistani population exhibited no statistically sig-
nificant correlation with any of the variables under investigation. The
findings of this study suggest that there exists a positive and moderate cor-
relation between the quality of sleep and all three dimensions of the MHC-
SF. Additionally, the quality of sleep was found to be negatively correlated
with feelings of loneliness. The present study findings indicate a statisti-
cally significant association between fear of COVID-19 and all study vari-
ables, except for age.

Table 4 displays the results of Pearson's correlation analysis examining the
interrelationships of the study variables within the Nepalese population. The

Table 3. Pearson's correlation analysis (S_P).

		1	2	3	4	5	6	7	8
1	Age	-							
2	MHC-SF$_E$	0.11	-						
3	MHC-SF$_S$	0.07	0.58***	-					
4	MHC-SF$_{PSY}$	0.19	0.63***	0.52	-				
5	UCLA	0.28	−0.21*	−0.18	−0.14	-			
6	PSQI	0.06	0.44**	0.59***	0.61***	−0.37**	-		
7	IHS	0.24	0.65***	0.46***	0.55***	−0.29	0.42**	-	
8	FCV-19S	0.33	−0.34***	−0.21*	−0.46***	−0.33***	0.47***	−0.30**	-

Table 4. Pearson's correlation analysis (S_N).

		1	2	3	4	5	6	7	8
1	Age	-							
2	MHC-SF$_E$	−0.13	-						
3	MHC-SF$_S$	−0.17	0.60***	-					
4	MHC-SF$_{PSY}$	−0.13	0.64***	0.58***	-				
5	UCLA	−0.28	−0.31	−0.22*	−0.13	-			
6	PSQI	−0.46	0.27*	0.28*	0.35*	0.44**	-		
7	IHS	0.33	0.48***	0.58**	0.53***	−0.45**	0.52***	-	
8	FCV-19S	−0.09	0.26	0.11*	0.34	0.22	0.41**	−0.10	-

analysis demonstrated statistically significant moderate correlations between all dimensions of MHC-SF and IHS. A notable correlation was found between COVID-19 fear and levels of IHS, where a weak negative relationship was identified. Furthermore, there exists a negative correlation between the age of the Nepalese sample and the UCLA score, whereas a positive correlation is observed between the age of the sample and the IHS score. Furthermore, our findings highlight a strong positive correlation between PSQI and all dimensions of MHC-SF. In contrast, we observed a negative connection between sleep quality and UCLA, suggesting a moderating effect on the connection between these variables. The investigation revealed that the dimension of a relationship in the case of PSQI exhibited similarities in both the sample populations, with a slight tendency for a stronger correlation among Nepalese individuals compared to those from the Pakistani population. The results of the correlation matrix also depict the absence of multicollinearity among the study variables, as the range of the correlation coefficient was less than 0.7 in both sample populations.

A comparative analysis was conducted on survey data utilising Fisher's Z-test (Table 5) to determine disparities within the variables associated with psychological wellness following the period of mandated isolation resulting from the COVID-19 outbreak, across diverse cultural populations. The comparative analysis revealed noteworthy distinctions in the context of the MHC-SF$_{PSY}$ and MHC-SF$_E$ correlation with IHS when considering

Table 5. The Fisher's Z-test's *p*-value for comparing variations between the two populations.

		1	2	3	4	5	6	7	8
1	Age	-							
2	MHC-SF$_E$	-	-						
3	MHC-SF$_S$	-	0.22	-					
4	MHC-SF$_{PSY}$	-	0.08	0.24	-				
5	UCLA	-	0.02	-	-	-			
6	PSQI	-	-	0.04	-	#	-		
7	IHS	#	<0.01	0.26	<0.01	#	-	-	
8	FCV-19S	-	-	#	-	-	-	#	-

Note: #A statistically significant value co-occurring with the corresponding statistically non-significant value.

participants from Pakistan and Nepal. Moreover, the association between UCLA and both PSQI and IHS exhibited variations across these multicultural populations. In comparing the two sample populations, it was observed that the level of fear related to COVID-19 demonstrated a negative correlation with measures of individual happiness and mental health satisfaction, specifically IHS and the MHC-SF$_s$. There were no statistically significant variations noted in the variables analyzed using Fisher's Z-test between the populations belonging to the two distinct cultures. However, several contrasting outcomes were found among these cohorts regarding the statistical significance (versus insignificance) of associations. In addition, age showed no significant association with any of the variables among the two distinct populations.

4. Discussion

The impact of the COVID-19 outbreak varied across different countries, with certain nations being significantly more severely affected than others. The available literature posits that when comprehending a given phenomenon, the consideration of cultural disparities among nations may prove as essential as assessing socio-demographic or economic factors. The responses of different societies to the perceived threats of COVID-19 demonstrated significant diversity and had profound impacts on the psychological well-being of their populations. Cultural disparities were found to have had a significant impact on the degree to which individuals conformed to the directives and mandates issued by public health authorities. The implementation of restrictions on face-to-face social interactions, despite the wide range of online communication options available, has had an impact on the overall welfare of individuals (Chan et al., 2021 Jiang et al., 2021).

Several investigations indicate that the impact of this phenomenon is influenced by sociocultural distinctiveness (Beller & Wagner, 2020; Kar et al., 2020). The findings of our research indicate a lack of discernible cultural distinctions in the manifestation of loneliness. It is imperative to acknowledge that our population possessed a distinct characteristic as it exclusively comprised individuals enrolled in university, exhibiting an average age below 30 years. The empirical evidence reveals a positive correlation between advancing age and an augmented degree of loneliness. The lack of observed influence of intercultural differences on loneliness within the surveyed group of university students could potentially be attributed to the homogeneity of age among all participants, as they were primarily young individuals (Chandio, 2020 Raymond & Ward, 2021). Significant distinctions were discerned in the correlation between loneliness and MHC-SF within the scope of our investigation. The results of our study indicate a statistically significant correlation between UCLA and all three dimensions of the MHC-SF. The aforementioned relationship exhibited congruency within both populations. The

findings of this study are particularly notable when considering the interplay between IHS and concerns regarding COVID-19, as these associations may vary across diverse populations (Jamali et al., 2020; Shah et al., 2022).

The most prominent intercultural variation observed among the examined variables pertained to the level of fear toward COVID-19. The study's findings indicated a lack of correlation between the participants and their perceived level of fear. However, in contrast, there was no discernible relationship between the analyzed variables and the level of fear within the Nepalese population, relative to the Pakistani population. These findings can be elucidated by the variations associated with the distinct nature of the examined cultures, particularly dissimilarities in both Individualism and collectivism. The present study carried out after the occurrence of the outbreak, displays evident indications that the Nepalese respondents harboured a heightened level of apprehension toward COVID-19. This finding can potentially be attributed to the prevailing economic conditions present in both nations. To a somewhat diminished degree, there were additional variables that distinguished the two nationalities. The MHC-SF$_S$ exhibited higher scores within the Nepalese sample, while the MHC-SF$_{PSY}$ manifested higher scores within the Pakistani sample. This could be interpreted by considering the unique nature of collectivism, in which individual well-being is influenced, among other factors, by social interactions (O'Sullivan et al., 2021; Rajkumar, 2020).

Scholarly research indicates that there has been a surge in the prevalence of loneliness among college and university-level students across various academic levels since the onset of the outbreak (Phillips et al., 2022). Conversely, senior individuals have exhibited heightened resilience to the psychological ailments associated with pandemic-induced living conditions. This resilience can be attributed to their use of superior emotion regulation strategies, lower susceptibility to stress, as well as more frequent encounters with isolation, and the challenge of managing health issues (Rana et al., 2020 Yadav et al., 2021). The younger population exhibits a greater susceptibility to difficulties in coping with instances of social isolation as compared to their older counterparts due to their inherent need for social interaction with peers to maintain their overall healthcare. The diminished experience of loneliness was observed to be correlated with advanced age and increased interpersonal interactions. Regarding the examination of individual loneliness amidst the COVID-19 outbreak, it is crucial to highlight that loneliness, in its essence, constitutes a typical psychological condition. The phenomenon of experiencing it is pervasive among individuals across various life stages and may not be readily apparent in posing a direct threat to their overall healthcare or psychological health (Rafiq et al., 2021).

Additionally, the findings have indicated a substantial correlation between apprehension towards COVID-19, mental health concerns measured by MHC-SF$_S$, and suboptimal sleep patterns. The aforementioned association exhibited

a greater level of strength within the Pakistani population when contrasted with the Nepalese population. Prior research has yielded comparable findings as well. According to a study conducted among students in Bangladesh, there was a correlation between the level of poor sleep quality and an increasing fear of COVID-19. *Shrestha, D., et al.,* investigated the impact of climate change on plant diversity in the Himalayas. A study conducted among students also found a link between lower academic performance and increased COVID-19-related concerns (Shrestha et al., 2021). The occurrence of sleep deprivation among students may potentially be attributed to the abrupt alteration in pedagogical approaches within education as a result of the COVID-19 outbreak. The evaluation and addressing of sleep quality is a matter of utmost significance at both national and global levels.

Our study revealed a significant correlation between the level of COVID-19 fear among university students and their experience of insomnia, which persisted across both sample populations. The results obtained in our study demonstrate congruity with previous research. The high transmissibility of COVID-19 and its significant impact on health underscore the possibility of instilling apprehension towards the virus among student populations (Popescu et al., 2022). Prior investigations have elucidated the inherent risks posed to the overall well-being, both physical and mental, of students as a consequence of the COVID-19 outbreak and consequential alterations in educational methods, including the manifestation of fear associated with the aforementioned outbreak. The exacerbation of apprehension towards COVID-19 has the potential to give rise to various mental manifestations. Heightened concerns regarding COVID-19 can also instigate a multitude of severe physical dysfunctions such as insomnia (Diener, 1984). Recent research has indicated that apprehensions surrounding COVID-19, encompassing anxieties about the unpredictable course of events and the potential acquisition of the COVID-19 infection, alongside apprehensions regarding one's well-being, have exhibited associations with suboptimal psychological well-being (Çiçek, 2022). This outcome implies that alleviating students' anxiety related to COVID-19 may serve as an effective approach for mitigating stress and enhancing their sleep patterns amidst the successive waves of the COVID-19 outbreak. Hence, the alleviation of apprehension about COVID-19 may potentially contribute to a decrease in the perceived levels of stress among students. The correlation between intense concerns related to COVID-19 and the manifestation of sleep disturbances among student populations can be regarded as an inescapable outcome. Subsequently, university administrators must acknowledge and address the concerns surrounding the apprehension posed by COVID-19 among students amidst the ongoing outbreak. Further investigation is warranted to elucidate the precise mechanism underlying the association between fear of COVID-19 and the development of insomnia.

5. Study limitations

One major constraint encountered in the current study is the absence of control over various variables, including the field of study pursued by the students and their socioeconomic and cultural backgrounds. Hence, it is imperative to approach the findings with prudence and solely consider the study participants who encountered social isolation attributable to the COVID-19 outbreak. Furthermore, the population under study in this inquiry encompassed individuals during the period of young adulthood and early midlife. A more diverse sample composition may provide insights into variations observed in individuals across developmental stages. Moreover, it should be acknowledged that the samples incorporated in the current study are relatively limited in size and merely encompass a fraction of the student population in both nations. Hence, the current research lacks complete reproducibility due to the escalating duration since the conclusion of the COVID-19 pandemic. In our investigation, we exclusively employed self-report measures, a methodology that potentially enables response sets and social desirability biases.

6. Practical significance

The research holds practical significance in providing insight into effective strategies that institutions can implement to improve the mental well-being of their student populations. This information can be utilised to inform and guide institutional policies and practices aimed at supporting the mental health of students. It is recommended that institutions of higher education allocate resources towards personalised mental health services that consider cultural variations, providing counselling options that align with the varied backgrounds and perspectives of their student population. Educational institutions ought to utilise online mental health resources as a means to extend their reach to a broader student demographic while acknowledging the influence of differing degrees of COVID-19 apprehension on psychological health. Ultimately, the incorporation of cultural competence training for educators and mental health professionals is crucial in establishing a nurturing environment that recognises and appropriately responds to the distinctive needs of students.

7. Conclusion

In summary, this research offers insight into the unique post-COVID-19 experiences of university students in Pakistan and Nepal. It is noteworthy that an intercultural disparity was apparent, as there was a higher level of

fear of COVID-19 observed among participants of Nepalese students. The COVID-19 fear demonstrated a lack of significant associations with other variables, except for a negative correlation with the social aspect of mental health. This finding is indeed intriguing. Despite variations in COVID-19 concerns across different cultural settings, there was a notable positive association observed between psychological strengths and personal well-being. Additionally, a correlation was found between the resumption of regular activities following an outbreak and a positive outcome. The implications of this study highlight the significant psychological effects of the pandemic on university students, emphasising the influential impact of cultural differences in shaping individuals' reactions to this common global crisis.

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Availability of data and materials

The raw data supporting the findings of this study are available upon reasonable request from the authors.

Consent for publication

All authors have read and approved the submission of this manuscript.

Contributions

All authors listed have made a substantial, direct, and intellectual contribution to the work and approved it for publication.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Ethics approval and consent to participate

The study has been approved by the Ethics Review Committee at Hazara University (Ref: 3492). The consent form was obtained from all participants involved in the study. All research procedures followed the Declaration of Helsinki and its later amendments.

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