Nature-Nurture Journal of Psychology (2022)
(NNJP 2: 2; 2022) DOI: 10.53107/ nnjp.v2i2.26

RESEARCH ARTICLE Open Access

A Web-Based Cross-Sectional Survey of Coping Mechanisms, Psychological Symptoms, and Mental Health in Pakistan during the Covid-19 Outbreak

Aqsa Chaman, Kanwar Hamza Shuja, & Minahil Rani

Abstract

Background: The global coronavirus epidemic (COVID-19) has had a substantial impact on people's livelihoods, mental health, and quality of life. This study looked at how psychological issues, coping mechanisms, and mental health were related in Pakistan during the COVID-19 Outbreak. Additionally, it was investigated how psychological issues in Pakistan during the COVID-19 Outbreak mediated the relationship between coping mechanisms and mental health.

Methods: Five hundred participants, whose ages ranged from 12 and 18 (M = 16.51, SD = 2.01) years, were recruited from different colleges in Rawalpindi and Islamabad, Pakistan. This web-based survey was completed in the first wave of the COVID-19 epidemic full and partial lockdown, between March 23 and June 30, 2020. A web-based survey was applied to get data related to psychological problems, coping strategies, and mental health in Pakistani college adolescents in the first wave of the COVID-19 epidemic.

Results: This study's results revealed that an active coping strategy was significantly positively associated with interpersonal sensitivity symptoms in adolescent students. The findings also demonstrated that the denial coping strategy was significantly associated with hostility symptoms, phobic anxiety symptoms, and paranoid ideation in adolescent students. Furthermore, these findings revealed that anxiety symptoms were partially mediated by venting coping strategy and mental health in adolescent students. Moreover, these findings revealed that interpersonal sensitivity symptoms and hostility symptoms were fully mediated among active, venting, substance use coping strategies and mental health in adolescent students.

Conclusions: The current study's findings revealed that adolescent students are a more vulnerable populace that needs specific prevention and interventions to improve and protect their psychological problems and mental health issues in the current epidemic globally.

Keywords: COVID-19 epidemic lockdown, coping mechanisms, psychological symptoms, and mental health

1. MS scholar, Department of Psychology, Government College University, Pakistan.
2. M.Phil Scholar, National Institute of Psychology, Quaid-i-Azam University, Pakistan.
3. BS Scholar, University of the Punjab, Pakistan.

Correspondence concerning this article should be addressed to Aqsa Chaman, Department of Psychology, Government College University, Pakistan. Email: Aqsa.chaman8@gmail.com.

Nature-Nurture Publishing Group

Background

Today, the coronavirus epidemic (COVID-19) has significantly impacted people's livelihoods and quality of life around the globe since the World Health Organization (WHO) designated it an international pandemic in the month of March 2020 (Aqeel et al., 2022;Aqeel et al., 2021; Commodari et al., 2021; Commodari & La Rosa, 2020; Ghebreyesus, 2020; Islam et al., 2020; Kaparounaki et al., 2020; Shuja, et al., 2020; Shuja, et al., 2020). On June 7, 2020, 6.91 million individuals worldwide had COVID-19 infections (Chang et al., 2020; Commodari et al., 2021; Commodari & La Rosa, 2020; UNESCO, 2020). In order to stop the spread of the highly contagious virus from person to person, various nations, including the United Kingdom, the United States of America, France, Russia, India, and Pakistan, implemented a variety of anti-epidemic measures, including closing down private and public spaces, shutting down the whole transit system, and restricting travel for citizens of other countries (Chen et al., 2020; Qiu et al., 2020).

The current pandemic has led all educational institutes across the globe to take drastic precautionary measures that have directly impacted how the students socialize and interact on a daily basis (Elmer et al., 2020). Countries like the United Kingdom, the United States of America, France, Russia, India, Pakistan, etc., have all imposed "lockdowns" nationwide which require citizens to remain inside their homes, except for in cases of needed activities (i.e., shopping for groceries, medical emergencies). This lockdown has resulted in the closure of schools, colleges, and universities in a variety of countries, and the educational system has had to adapt to other sources, such as remote or online teaching methods, forcing students to confine themselves to their homes (Savage et al., 2020). As denoted by UNESCO, as of April 8, 2020, around 118 countries have postponed all education activities nationally and internationally (Rajkumar, 2020; Rodríguez-Rey et al., 2020; Savage et al., 2020; Yao et al., 2020; Zhai & Du, 2020). This roughly estimates to around 1-5 million students (90%) who are currently out of institutes and are confined in their homes (Aqeel et al., 2020). This abrupt change in the lives of students, along with the added restrictions enforced by the government on social distancing and movement constraints, is expected to have a negative effect on the mental health of students (Qiu et al., 2020; Rajkumar, 2020; Rodríguez-Rey et al., 2020). Moreover, there is also a high probability for students who suffered from pre-mental health issues before the lockdown to relapse or have their condition worsened (Yao et al., 2020).

The first case of COVID-19 in Pakistan appeared on February 26th, 2020. After that, the situation escalated rapidly and, in order to reduce and contain the spread, a complete lockdown was imposed in Pakistan on March 23rd, 2020. However, given the economic difficulties of the country, the government converted the complete lockdown into a "smart lockdown' on May 9th, 2020 (Aqeel et al., 2019; Kaleem, 2020; Naeem et al., 2021; Toqeer et al., 2021). Nevertheless, in order to safeguard students' health and control the spread of the virus, all educational institutes were closed on March 13th, 2020 across Pakistan. Initially, this closure was until March 31st, 2020. However, assessing the situation was extended to May 31st, 2020, but eventually ended on September 15th, 2020 (Gul & Aqeel, 2021; Nafees & Khan, 2020).

Though social distancing does prove effective in mitigating the spread of viruses and reducing the load of work on health workers (Glass et al., 2006), this can also lead to social isolation among students, causing mental health problems and affecting their psychological well-being (Bavel et al., 2020). Students face a lot of pressure to perform well academically and are prone to developing several mental health issues as a result (Mikolajczyk et al., 2008). Their social life is thought to act as a buffer in reducing such psychological stress and assisting them in better coping with their situation (Stadtfeld et al., 2019). For many students with pre-existing mental health issues as well as those with no mental health issues, routine activities and educational resources are a way of coping (Fazel et al., 2014; Kaess et al., 2019; McDougall, 2016). These institutes enable students to elevate themselves from whatever issues and difficulties they are facing in their personal life by associating with other students and teachers (Townsend & Bates, 2006; Weissbourd, 2003).

With all the educational institutes closed due to lockdown, there is a significant reduction in their daily social interactions as well as a genuine lack of social support. This, along with the current stressors related to the current pandemic, can all potentially affect the mental health of students negatively (Larsen & Luna, 2018; Sturman & Moghaddam, 2011; Swick et al., 2002). Previous research indicates that similar situations have a variety of psychological effects on students' lives, including chronic and acute stress, depression (Douglas et al., 2009; Hashmi et al., 2014; Roy et al., 2020; Wang et al., 2020), reduced quality of life, fear for the future of family and country (Abramson, 2020; Peterman et al., 2020; van Gelder et al., 2020), and increased time spent on Likewise (Guessoum et al., 2020). Likewise, Cao et al. (2020), in their research on 7143 undergraduate Chinese students indicated that having an infected relative or acquaintance was also a potential risk factor for anxiety. Whereas, factors like stable family income, living in urban area, and living with family served as protective factors (Cao et al., 2020).

In another survey conducted on 8079 Chinese students between the ages of 12–18, Zhou et al.(2020) stated a significant prevalence of anxiety (37%), depression (43%), and combined symptoms of anxiety and depression (31%), in students during COVI-19 lockdown, with females having a higher risk factor (Zhou et al., 2020). A study of similar nature was also recently conducted in Pakistan by Salman et al. (2020), where 1134 university students (aged 21.7, 3.5 years, 70.5% females) were assessed for anxiety and depression. Results indicated students had moderate to severe anxiety (34%) and depression (45%) during the COVID-19 lockdown (Salman et al., 2020). Additionally, two more recent reviews suggest a negative impact of COVID-19 on mental health, with about 16–18% of samples presenting symptoms of anxiety and depression (Rajkumar, 2020; Schäfer et al., 2020; Vindegaard & Eriksen Benros, 2020).

Other evidence implies that females (Liu et al., 2020; Rodríguez-Rey et al., 2020), adolescents (Huang & Zhao, 2020), and people with poor sleep quality (Huang & Zhao, 2020; Liu et al., 2020) are more prone to mental health problems during COVID-19 lockdown. Findings from these

studies support the hypothesis that lockdown does result in an increased risk of mental health issues like depression, anxiety, and related symptoms.

Only a small number of studies have looked at how negatively the lockdown connected with COVID-19 affects kids' general mental health and quality of life (Zhang & Ma, 2020). Few research have examined the psychological effects of COVID-19 in the afflicted population (Brooks et al., 2020; Chan et al., 2020; Huang et al., 2020). Similar to the aforementioned research, not many studies have looked at how the lockdown itself influenced the student body and changes from before to after the outbreak (Schäfer et al., 2020). No study, though, has examined the impact of Pakistani kids being subjected to two types of lockdown: a complete lockdown and a smart lockdown (Aqeel et al., 2022;Aqeel et al., 2021; Odriozola-González et al., 2020; Shuja, et al., 2020b; Shuja, et al., 2020). The present study aimed to investigate the association among psychological problems, coping strategies and mental health in adolescent's students during COVID-19 epidemic lockdown. Moreover, it was explored the mediating role of psychological problems between coping strategies and mental health in adolescent's students during COVID-19 epidemic lockdown.

Method

Research design

A web-based survey was applied to get data related to psychological problems, coping strategies and mental health through the Google Form from different official collages the Internet platforms. The convenient and cross-sectional survey design was used to gather data from collages students. The link of information was shared through social media WhatsApp with BS students.

Research objectives and hypotheses

Based on abovementioned theories, this study examined the association among psychological problems, coping strategies and mental health in Pakistan during the Covid-19 Outbreak. Moreover, it was explored the mediating role of psychological problems between coping strategies and mental health in Pakistan during the Covid-19 Outbreak. More precisely, this research also designed to examine the following assumptions that was closely associated with mental health issues and experiences of adolescent's students during the Covid-19 Outbreak.: Hypothesis 1 (H1): A higher exposure of psychological problems will be associated with lower level of mental health in adolescent's students during the Covid-19 Outbreak. Hypothesis 2 (H2): There will be association among psychological problems, coping strategies and mental health in adolescent's students during the Covid-19 Outbreak.

Participants

Five hundred participants (male, n = 250; female, n = 250) with age ranged from 12 and 18 (M=16.51, SD=2.01) years, were recruited from different collages in Rawalpindi and Islamabad, Pakistan. This web-based survey was completed in first wave of the Covid-19 epidemic full and partial lockdown, between 23, March to 30, June, 2020. The convenient and cross-sectional survey design was used to gather data from collages students. A web-based survey was applied to get data related to psychological problems, coping strategies and mental health in Pakistani collages adolescent's students in the first wave of the COVID-19 epidemic. For performing this study, Ethical approval and the permission was obtained from higher authorities of different collages of Islamabad and Rawalpindi, Pakistan. Both verbal and written informed consent were get from parents and participants through online platforms before starting this research.

The inclusion criteria was set and followed to collect information of participants: 1) those participants who had experienced and infected with COVID-s19. 2) Those participants who were joined and participated in their regular online classes from both twin's cities of Rawalpindi and Islamabad, Pakistan. They had also appropriate internet facility to participate this study. The following exclusion criteria was set: those participants who did not experience with COVID-19 in first wave and they were excluded from online survey. All participants were invited to fill standardized psychological scales through online social media application such as WhatsApp.

Measures

Three standardized psychology instruments were used to examine coping strategies and mental health in adolescent's students during COVID-19 epidemic lockdown.

The Brief Symptom Inventory (BSI; Derogates & Melisaratos, 1983). The brief symptom inventory was devised by Derogatis and Melisaratos (1983). It was developed to examine different symptoms of the psychological problems in both clinical and normal samples. It is an 53-item self-report inventory which is consisted of nine psychological problems: (1) somatic symptoms; (2) obsessive compulsive symptoms; (3) interpersonal sensitivity symptoms; (4) depression symptoms ; (5) anxiety symptoms; (6) hostility symptoms; (7) phobic anxiety symptoms; (8) paranoid ideation symptoms and (9) psychoticism symptoms. Each item of the brief symptom inventory is rated on a 4-point Likert scale between *0 (Not at all) to 4 (Extremely).* The brief symptom inventory has revealed adequate validity and reliability (Derogatis & Melisaratos, 1983).

The Brief-Cope inventory (BCI; Carver, 1997). It was devised to examine different coping strategies of a people may have in reaction to a particular situation and condition (Carver, 1997). It consists of an 28 – items which included 14 subscales: active coping, self-distraction coping, denial coping, use of emotional support coping, use of instrumental support coping, substance use coping, behavioral disengagement coping, positive reframing coping, venting coping, planning coping, acceptance coping, and religion coping, self-blame coping strategies. Each item of the brief-cope inventory is rated on a 4-point Likert scale from 1 *(I usually don't do this at all) to 4 (I usually do this a lot).* The brief-cope inventory has shown satisfactory validity and reliability (Carver, 1997).

The Warwick-Edinburgh Mental Well-Being Scale (WMWS; Stewart-Brown et al., 2008). It was developed by Stewart-Brown et al. (2008) which included 14-items, it was designed to measure the mental well-being in both clinical and normal samples. Each item of the Warwick-Edinburgh mental well-being scale is rated on a 5-point Likert scale from *1* (*None of the time*) to

5(All of the time). The Warwick-Edinburgh mental well-being has revealed adequate validity and reliability (Stewart-Brown et al., 2008).

Procedure

This study was carried out in accordance with the ethical standards of the Committee on Publication Ethics (COPE) and American Psychological Association (APA). This study was also approved by the Department of Psychology, Foundation University Islamabad, Pakistan. Five hundred participants were recruited from different collages in Rawalpindi and Islamabad, Pakistan. For performing this study, Ethical approval and the permission was obtained from higher authorities of different collages of Islamabad and Rawalpindi, Pakistan. Both verbal and written informed consent were get from parents and participants through online platforms before starting this research. Product moment correlation technique and a multiple mediational analyses were used to analyze data of this study.

Analysis plan

First of the all, the missing values of the Warwick-Edinburgh mental well-being scale, the brief-cope inventory, and the brief symptom inventory were dealt through an imputation method through SPSS–20 in the present study (Field, 2009). After that product moment correlation technique was used to examine the association among psychological problems, coping strategies and mental health in adolescent's students during COVID-19 epidemic lockdown (Field, 2009). Finally, a multiple mediational analysis was used to examine potential mediation pathways among psychological problems, coping strategies and mental health in adolescent's students during COVID-19 epidemic lockdown through the statistical package of Structural Equation Modeling (SEM) (Baron, & Kenny, 1986).

Results

In Table 1, the Cronbach alpha coefficient of coping strategies, mental health, and the brief symptom inventories were satisfactory in adolescent's students in Pakistan during the Covid-19 Outbreak. This study's results revealed that active coping strategy was significantly positively associated to interpersonal sensitivity symptoms in adolescent's students. Moreover, the findings demonstrated that denial coping strategy was significantly associated to hostility symptoms, phobic anxiety symptoms, paranoid ideation in adolescent's students. Furthermore, the results shown that substance use coping strategy was significantly associated to interpersonal sensitivity symptoms, depression symptoms, anxiety symptoms hostility symptoms, psychoticism, and paranoid ideation in adolescent's students. Additionally, the results shown that use of instrumental support coping strategy was significantly associated to paranoid ideation in adolescent's students. In addition, the results revealed that venting coping strategy was significantly associated to somatic symptoms, obsessive compulsive symptoms, depression symptoms, anxiety symptoms hostility symptoms, psychoticism, paranoid ideation, and mental health in adolescent's students. Moreover, this study also revealed that mental health was negatively significantly associated to somatic symptoms, obsessive compulsive symptoms, depression symptoms, anxiety symptoms hostility symptoms, psychoticism, and paranoid ideation in adolescent's students.

In Table 2, these findings demonstrated model fit by examining the mediating role of psychological disorder symptoms between coping strategies and mental health in adolescents during the COVID-19 epidemic lockdown. The current study found that the model fit well: 2 (4) =.790, p.641, 2/df =.19, CFI =.96, NFI =.95, IFI =.92, RFI =.98, TLI =.95, RMSEA =.000. The results illustrated that active coping strategy (AC) was significantly predicting to interpersonal sensitivity symptoms (ISC) in adolescent students. Furthermore, the results revealed that substance use coping strategy (DAC) was significantly predicting to obsessive compulsive symptoms (OC), interpersonal sensitivity symptoms (ISC), depression symptoms(DP), anxiety symptoms (AS), paranoid ideation (PIS), and psychoticism (PS) in adolescent students. Furthermore, the findings revealed that adolescent students' venting coping strategy (VC) was significantly associated with obsessive compulsive symptoms (OC), interpersonal sensitivity symptoms (ISC), hostility symptoms (HS), depression symptoms (DP), anxiety symptoms (AS), paranoid ideation (PIS), psychoticism (PS), and mental health (MH). Furthermore, religious coping strategy (RC) was significantly predicted to cause paranoid ideation (PIS) in adolescent students. The results revealed that self-blame coping strategy (SB) was significantly predicting to obsessive compulsive symptoms (OC) and somatic symptoms in adolescent students. The results also revealed that interpersonal sensitivity symptoms (ISC), anxiety symptoms (AS), and hostility symptoms (HS) were significantly predicting to mental health (MH) in adolescent students. Furthermore, these findings revealed that anxiety symptoms partially mediated between venting coping strategy and mental health in adolescent students. Moreover, these findings revealed that interpersonal sensitivity symptoms and hostility symptoms were fully mediated among active, venting, substance use coping strategies and mental health in adolescent students.

Discussion

The coronavirus epidemic (COVID-19) has significantly effected people's livelihoods and quality of life around the globe since the World Health Organization (WHO) designated it an international pandemic in the month of March 2020 (Aqeel et al., 2022;Aqeel et al., 2021; Commodari et al., 2021; Commodari & La Rosa, 2020; Ghebreyesus, 2020; Islam et al., 2020; Kaparounaki et al., 2020; Shuja, et al., 2020; Shuja, et al., 2020).

This study looked at how psychological issues, coping mechanisms, and mental health were related in Pakistan during the Covid-19 Outbreak. Additionally, it was investigated how psychological issues in Pakistan during the Covid-19 Outbreak mediated the relationship between coping mechanisms and mental health.

The current research mostly replicates previous studies examining relationship among psychological problems, coping strategies and mental health in adolescent's students. This study's results revealed that active coping strategy was significantly positively associated to interpersonal sensitivity symptoms in adolescent's students.

Table 1

Correlation matrix, Alpha Cronbach Coefficient, Mean and Standard Deviation of psychological problems, coping strategies and mental health in adolescent's students during COVID-19 epidemic lockdown (N=500).

Variables	M	SD	α	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1.SD	4.91	.97	.86	-	.38**	.11	.06	.20	.01	.15	.26*	.22	.29*	-.06	.01	.01	.27*	.10	-.06	-.08	.07	.06	.09	-.09	-.01	-.02	.04
2.AC	4.50	1.22	.81		-	.14	.01	.04	-.02	.24*	.06	.15	.30*	-.06	.09	-.39**	.14	.11	.04	.24*	.04	.20	.17	.09	.05	.13	-.01
3.DC	3.17	1.15	.84			-	.11	.02	.14	.35**	.36*	.27*	.21	.27*	.35**	-.06	.08	.19	.22	.06	.20	.14	.36**	.30*	.34**	.23	-.21
4.DAC	2.20	.75	.76				-	.14	-.16	-.04	-.03	-.06	.27*	.11	.24*	.01	.04	.16	.25*	.35**	.28*	.33**	.36**	.17	.28*	.29*	-.20
5.UESC	3.98	1.41	.75					-	.34**	.18	.15	.11	.13	.15	.12	.18	.20	.12	.07	-.04	.09	.11	.03	.04	.16	-.07	-.02
6.UISC	3.84	1.38	.69						-	.16	.39**	.33**	.45**	.13	.25*	.11	.38**	.16	.20	.10	.16	.07	.20	.04	.25*	.01	-.23
7.BDC	3.40	1.15	.79							-	.20	.30*	.32**	-.03	.21	.32*	.14	.01	.02	-.06	-.10	.05	.11	.02	.06	-.06	-.03
8.VC	3.80	1.14	.81								-	.38**	.24*	-.07	.26*	.22	.14	.30*	.24*	.22	.43**	.15	.36**	.13	.31**	.26*	-.31**
9.PRC	3.91	1.45	.82									-	.12	-.09	.27*	.01	-.11	.16	.09	.15	.17	.21	.29*	.15	.21	.11	-.35**
10.PC	3.80	1.32	.83										-	.03	.15	.06	.24*	.20	.16	.20	.09	.28*	.22	.09	.14	.16	-.37**
11.HCS	2.70	.89	.75											-	.33**	.03	.33**	.08	.16	.17	.08	.11	.23*	.21	.29*	.11	-.29*
12.ACC	3.51	1.25	.76												-	-.01	.15	-.22	-.22	-.08	-.18	-.25*	.06	.03	.17	-.18	-.17
13.RC	3.48	1.58	.67													-	-.05	.04	-.01	-.12	.18	-.13	-.13	-.24*	-.14	-.03	-.07
14.SB	2.61	1.02	.71														-	.40**	.29*	.17	.19	.15	.20	.14	.24*	.08	-.21
15.SS	4.64	5.69	.67															-	.87**	.73**	.78**	.86**	.74**	.69**	.63**	.71**	-.41**
16.OC	6.07	6.45	.75																-	.80**	.80**	.87**	.83**	.78**	.72**	.83**	-.41**
17.ISC	4.54	4.99	.73																	-	.77**	.86**	.80**	.71**	.73**	.87**	-.54**
18.DP	6.14	7.47	.68																		-	.78**	.75**	.57**	.69**	.79**	-.46**
19.AS	6.21	6.19	.64																			-	.81**	.73**	.68**	.82**	-.46**
20.HS	4.32	4.80	.67																				-	.73**	.84**	.75**	-.38**
21.PAS	4.88	5.04	.81																					-	.73**	.67**	-.43**
22.PIS	5.10	5.12	.76																						-	.60**	-.43**
23.PS	4.92	5.41	.71																							-	-.48**
24.MH	47.77	9.83	.78																								-

Note. SD= Self-distraction coping strategy; AC= Active coping strategy; DC= Denial coping strategy; DAC= Substance use coping strategy, UESC= Use of emotional support coping strategy; UISC= Use of instrumental support coping strategy; BDC= Behavioral disengagement coping strategy; VC=Venting Coping strategy; PRC= Positive reframing coping strategy; PC= Planning coping strategy; HCS=Humor coping strategy; ACC= Acceptance coping strategy; RC=Religion coping strategy; SB=Self-Blame coping strategy; SS=Somatic symptoms; OC= Obsessive compulsive symptoms; ISC= Interpersonal sensitivity symptoms; DP=Depression symptoms; AS= Anxiety symptoms; HS= Hostility symptoms; PAS= Phobic Anxiety symptoms; PIS= Paranoid ideation; PS=Psychoticism; MH= Mental health. *$p < .05$ **$p < .01$. ***$p < .000$.

Table 2

The mediating role of psychological problems between coping strategies and mental health in adolescent's students during COVID-19 epidemic lockdown (N=500).

Variables	OC			ISC			DP			AS			HS			PAS			PIS			PS			MH			SS		
	B	*SE*	*β*	*B*	*SE*	*B*	*B*	*SE*	*β*	*B*	*SE*	*β*	*B*	*SE*	*β*	*B*	*SE*	*β*	*B*	*SE*	*β*	*B*	*SE*	*β*	*B*	*SE*	*β*	*B*	*SE*	*β*
Ac				.92	.43	.23*																								
DAC	2.07	.92	.24*	2.33	.70	.35***	2.82	1.01	.28**	2.75	.93	.33**							1.96	.71	.28**	2.14	.79	.29**						
VC	1.19	.61	.21*	.90	.46	.20*	2.84	.66	.43***				1.53	.46	.36*				1.64	.48	.36***	1.25	.52	.26*	-2.46	.89	-.26**			
RC																			-.76	.35	-.23*									
SB	1.59	.69	.25*																									2.02	.59	.36***
AS																														
OC																														
ISC																									-1.17	.19	-.53***			
DP																														
AS																									-.32	.15	-.18*			
HS																									.74	.21	.32***			

Note. SD= Self-distraction coping strategy; AC= Active coping strategy; DC= Denial coping strategy; DAC= Substance use coping strategy, UESC= Use of emotional support coping strategy; UISC= Use of instrumental support coping strategy; BDC= Behavioral disengagement coping strategy; VC=Venting Coping strategy; PRC= Positive reframing coping strategy; PC= Planning coping strategy; HCS=Humor coping strategy; ACC= Acceptance coping strategy; RC=Religion coping strategy; SB=Self-Blame coping strategy; SS=Somatic symptoms; OC= Obsessive compulsive symptoms; ISC= Interpersonal sensitivity symptoms; DP=Depression symptoms; AS= Anxiety symptoms; HS= Hostility symptoms; PAS= Phobic Anxiety symptoms; PIS= Paranoid ideation; PS=Psychoticism; MH= Mental health. **p* < .05 ***p* < .01. ****p* < .000.

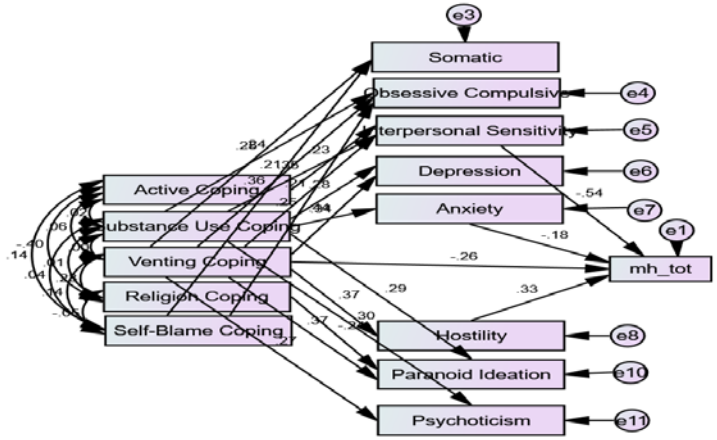

Figure. 1: The mediating role of psychological symptoms between coping strategies and mental health in adolescents' students during the COVID-19 epidemic lockdown *(N = 500).*

Moreover, the findings demonstrated that denial coping strategy was significantly associated to hostility symptoms, phobic anxiety symptoms, paranoid ideation in adolescent's students. Furthermore, the results shown that substance use coping strategy was significantly associated to interpersonal sensitivity symptoms, depression symptoms, anxiety symptoms hostility symptoms, psychoticism, and paranoid ideation in adolescent's students. These results replicate and support the earlier study's theories evidence(Aqeel et al., 2022;Aqeel et al., 2021; Commodari et al., 2021; Commodari & La Rosa, 2020; Ghebreyesus, 2020; Islam et al., 2020; Kaparounaki et al., 2020; Shuja, et al., 2020; Shuja, et al., 2020).

Furthermore, these findings revealed that anxiety symptoms partially mediated between venting coping strategy and mental health in adolescent students. Moreover, these findings revealed that interpersonal sensitivity symptoms and hostility symptoms were fully mediated among active, venting, substance use coping strategies and mental health in adolescent students. This study's findings support previous studies assumptions. The present study's findings are also consistent with previous studies results(Aqeel et al., 2022;Aqeel et al., 2021; Commodari et al., 2021; Commodari & La Rosa, 2020; Ghebreyesus, 2020; Islam et al., 2020; Kaparounaki et al., 2020; Shuja, et al., 2020; Shuja, et al., 2020). Many previous studies revealed that those people who had faced coronavirus, they were reported poor sleep quality and mental health (Huang & Zhao, 2020; Liu et al., 2020; Rodríguez-Rey et al., 2020). They also experienced different symptoms of psychological problems including anxiety, PTSD, depression, somatic complains (Huang & Zhao, 2020; Liu et al., 2020).

Limitations and Suggestions

1. However, the study was successful in examine association among among psychological problems, coping strategies and mental health in adolescent's students during COVID-19 epidemic lockdown. Due to the limited and largely online availability, the sample size was rather tiny. A larger sample size should be used in future studies to better capture the results.
2. Despite the fact that data was gathered as soon as the lockdown went into place, students' psychological health had already been impacted by it. It would have been preferable if the first round of data had been gathered when universities were actually open.
3. Another drawback was the timing difference between complete and partial lockdowns, which would have affected the results overall because the full lockdown in Pakistan lasted for a shorter time than the partial lockdown, which lasted for months. Future research comparing data between the two nations, one under full lockdown for the same time frame as Pakistan's partial lockdown, would be intriguing.

Future Implications

The current study is unique in that it attempts to evaluate the impact of lockdown on mental health of the Pakistani's students. The results urge policymakers to provide mental health treatments for students' mental health right away. Furthermore, the study may help policymakers develop lockdown procedures while taking into account how a lockdown may affect Pakistan's student population's mental health.

Conclusion

The current study's findings revealed that adolescent's students are a more vulnerable populace that needs specific preventions and interventions to improve and protect their psychological problems and mental health issues in the epidemic globally. It would also be highly fascinating to look at the psychological effects of the subsequent waves of epidemics due to the ongoing stress caused by the pandemic in Pakistan. This study concluded that coping strategies was playing major role to reduce magnitude of psychological problems and mental health in both full and partial lockdowns. This study also revealed that active coping strategy was significantly positively associated to interpersonal sensitivity symptoms in adolescent's students. Moreover, the findings demonstrated that denial coping strategy was significantly associated to hostility symptoms, phobic anxiety symptoms, paranoid ideation in adolescent's students. Furthermore, the results shown that substance use coping strategy was significantly associated to interpersonal sensitivity symptoms, depression symptoms, anxiety symptoms hostility symptoms, psychoticism, and paranoid ideation in adolescent's students. Moreover, these results revealed that anxiety symptoms partially mediated between venting coping strategy and mental health in adolescent students. Moreover, these findings revealed that interpersonal sensitivity symptoms and hostility symptoms were fully mediated among active, venting, substance use coping strategies and mental health in adolescent students.

Funding

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Ethical Consideration

The study was approved by Department of Psychology, Government College University, Pakistan. Consent Form was taken before taking data and participants were asked to take voluntary participation.

Acknowledgement

The author thanks to Department of Psychology, Government College University, Pakistan

Availability of data and materials

The data sets used and analyzed during the current study are available from the corresponding author on reasonable request.

Authors' contributions/Author details

Aqsa Chaman performed this study. Kanwar Hamza Shuja, & Minahil Rani wrote the article under the guidelines of Nature-Nurture Journal of Psychology.

Corresponding author

Correspondence to Abbas, J.

Aqsa.chaman8@gmail.com.

Ethics declarations

Ethics approval and consent to participate

This study was approved by the Institutional Review Board (*Department of Psychology, Government College*

University, Pakistan). A written informed consent was obtained from all participants.

Consent for publication

Not applicable.

Received: 14 August 2022 Accepted: 6 September 2022: 6 September 2022 published online

References

Abramson, A. (2020). How COVID-19 may increase domestic violence and child abuse. *American Psychological Association*, 4. https://www.apa.org/topics/covid-19/domestic-violence-child-abuse

Aqeel, M, Rehna, T., Shuja, K. H., & Abbas, J. (2022). Comparison of students' mental wellbeing, anxiety, depression, and quality of life during COVID-19's full and partial (smart) lockdowns: a follow-up study at a five-month interval. *Frontiers in Psychiatrist*.

Aqeel, Muhammad, Abbas, J., Shuja, K. H., Rehna, T., Ziapour, A., Yousaf, I., & Karamat, T. (2021). The influence of illness perception, anxiety and depression disorders on students mental health during COVID-19 outbreak in Pakistan: a Web-based cross-sectional survey. *International Journal of Human Rights in Healthcare*. https://doi.org/10.1108/IJHRH-10-2020-0095

Aqeel, Muhammad, Komal, R., & Akhtar, T. (2019). Emotional empathy mediates the relationship between personality traits and coping strategies in orphan and non-orphan students. *International Journal of Human Rights in Healthcare*, *12*(2), 163–176. https://doi.org/10.1108/IJHRH-02-2018-0015

Aqeel, Muhammad, Shuja, K. H., Abbas, J., Rehna, T., & Ziapour, A. (2020). *The Influence of Illness Perception, Anxiety and Depression Disorders on Students Mental Health during COVID-19 Outbreak in Pakistan: A Web-Based Cross-Sectional Survey*. https://doi.org/10.21203/rs.3.rs-30128/v1

Bavel, J. J. V., Baicker, K., Boggio, P. S., Capraro, V., Cichocka, A., Cikara, M., Crockett, M. J., Crum, A. J., Douglas, K. M., Druckman, J. N., Drury, J., Dube, O., Ellemers, N., Finkel, E. J., Fowler, J. H., Gelfand, M., Han, S., Haslam, S. A., Jetten, J., … Willer, R. (2020). Using social and behavioural science to support COVID-19 pandemic response. *Nature Human Behaviour*, *4*(5), 460–471. https://doi.org/10.1038/s41562-020-0884-z

Brooks, S. K., Webster, R. K., Smith, L. E., Woodland, L., Wessely, S., Greenberg, N., & Rubin, G. J. (2020). The psychological impact of quarantine and how to reduce it: rapid review of the evidence. *The Lancet*, *395*(10227), 912–920. https://doi.org/10.1016/S0140-6736(20)30460-8

Cao, W., Fang, Z., Hou, G., Han, M., Xu, X., Dong, J., & Zheng, J. (2020). The psychological impact of the COVID-19 epidemic on college students in China. *Psychiatry Research*, *287*, 112934. https://doi.org/10.1016/j.psychres.2020.112934

Chan, J. F. W., Yuan, S., Kok, K. H., To, K. K. W., Chu, H., Yang, J., Xing, F., Liu, J., Yip, C. C. Y., Poon, R. W. S., Tsoi, H. W., Lo, S. K. F., Chan, K. H., Poon, V. K. M., Chan, W. M., Ip, J. D., Cai, J. P., Cheng, V. C. C., Chen, H., … Yuen, K. Y. (2020). A familial cluster of pneumonia associated with the 2019 novel coronavirus indicating person-to-person transmission: a study of a family cluster. *The Lancet*, *395*(10223), 514–523. https://doi.org/10.1016/S0140-6736(20)30154-9

Chang, G.-C., Huong, L. T., Moumne, R., Bianchi, S., & Rondin, E. (2020). COVID-19: A glance of national coping strategies on high-stakes examinations and assessments. In *Education Sector* (Issue April). https://en.unesco.org/sites/default/files/unesco_review_of_highstakes_exams_and_assessments_during_covid-19_en.pdf

Chen, N., Zhou, M., Dong, X., Qu, J., Gong, F., Han, Y., Qiu, Y., Wang, J., Liu, Y., Wei, Y., Xia, J., Yu, T., Zhang, X., & Zhang, L. (2020). Epidemiological and clinical characteristics of 99 cases of 2019 novel coronavirus pneumonia in Wuhan, China: a descriptive study. *The Lancet*, *395*(10223), 507–513. https://doi.org/10.1016/S0140-6736(20)30211-7

Commodari, E., & La Rosa, V. L. (2020). Adolescents in quarantine during COVID-19 pandemic in Italy: perceived health risk, beliefs, psychological experiences and expectations for the future. *Frontiers in Psychology*, 2480.

Commodari, E., La Rosa, V. L., Carnemolla, G., & Parisi, J. (2021). The psychological impact of the lockdown on Italian university students during the first wave of COVID-19 pandemic: psychological experiences, health risk perceptions, distance learning, and future perspectives. *Mediterranean Journal of Clinical Psychology*, *9*(2).

Douglas, P. K., Douglas, D. B., Harrigan, D. C., & Douglas, K. M. (2009). Preparing for pandemic influenza and its aftermath: Mental health issues considered. *International Journal of Emergency Mental Health*, *11*(3), 137–144.

Elmer, T., Mepham, K., & Stadtfeld, C. (2020). Students under lockdown: Comparisons of students' social networks and mental health before and during the COVID-19 crisis in Switzerland. *PLoS ONE*, *15*(7 July), e0236337–e0236337. https://doi.org/10.1371/journal.pone.0236337

Fazel, M., Patel, V., Thomas, S., & Tol, W. (2014). Mental health interventions in schools in low-income and middle-income countries. *The Lancet Psychiatry*, *1*(5), 388–398. https://doi.org/10.1016/S2215-0366(14)70357-8

Ghebreyesus, T. A. (2020). *World Health Organization. WHO Director-General's opening remarks at the media briefing on COVID-19-25 May 2020*.

Glass, R. J., Glass, L. M., Beyeler, W. E., & Min, H. J. (2006). Targeted social distancing design for pandemic influenza. *Emerging Infectious Diseases*, *12*(11), 1671–1681. https://doi.org/10.3201/eid1211.060255

Guessoum, S. B., Lachal, J., Radjack, R., Carretier, E., Minassian, S., Benoit, L., & Moro, M. R. (2020). Adolescent psychiatric disorders during the COVID-19 pandemic and lockdown. *Psychiatry Research*, *291*, 113264.https://doi.org/10.1016/j.psychres.2020.11326

Competing interests

The authors declare to have no competing interests.

Additional Information

Not applicable.

4

Gul, M., & Aqeel, M. (2021). Acceptance and commitment therapy for treatment of stigma and shame in substance use disorders: a double-blind, parallel-group, randomized controlled trial. *Journal of Substance Use*, *26*(4), 413–419. https://doi.org/10.1080/14659891.2020.1846803

Hashmi, A., Aftab, M., Naqvi, S., Sajjad, W., Mohsin, M., & Khawaja, I. (2014). Anxiety and depression in Pakistani medical students: a multicenter study. *Health Med*, *8*(7), 813–820.

Huang, C., Wang, Y., Li, X., Ren, L., Zhao, J., Hu, Y., Zhang, L., Fan, G., Xu, J., Gu, X., Cheng, Z., Yu, T., Xia, J., Wei, Y., Wu, W., Xie, X., Yin, W., Li, H., Liu, M., … Cao, B. (2020). Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. *The Lancet*, *395*(10223), 497–506. https://doi.org/10.1016/S0140-6736(20)30183-5

Huang, Y., & Zhao, N. (2020). Mental health burden for the public affected by the COVID-19 outbreak in China: Who will be the high-risk group? *Psychology, Health and Medicine*, 1–12. https://doi.org/10.1080/13548506.2020.1754438

Islam, M. A., Barna, S. D., Raihan, H., Khan, M. N. A., & Hossain, M. T. (2020). Depression and anxiety among university students during the COVID-19 pandemic in Bangladesh: A web-based cross-sectional survey. *PloS One*, *15*(8), e0238162.

Kaess, M., Ritter, S., Lustig, S., Bauer, S., Becker, K., Eschenbeck, H., Moessner, M., Rummel-Kluge, C., Salize, H. J., Thomasius, R., Resch, F., & Koenig, J. (2019). Promoting Help-seeking using E-technology for ADolescents with mental health problems: Study protocol for a randomized controlled trial within the ProHEAD Consortium. *Trials*, *20*(1), 64. https://doi.org/10.1186/s13063-018-3157-7

Kaleem, M. F. (2020). *Educational institutions to stay closed till July 15; board exams cancelled*. Daily Times.

Kaparounaki, C. K., Patsali, M. E., Mousa, D.-P. V, Papadopoulou, E. V. K., Papadopoulou, K. K. K., & Fountoulakis, K. N. (2020). University students' mental health amidst the COVID-19 quarantine in Greece. *Psychiatry Research*, *290*, 113111.

Larsen, B., & Luna, B. (2018). Adolescence as a neurobiological critical period for the development of higher-order cognition. *Neuroscience and Biobehavioral Reviews*, *94*, 179–195. https://doi.org/10.1016/j.neubiorev.2018.09.005

Liu, N., Zhang, F., Wei, C., Jia, Y., Shang, Z., Sun, L., Wu, L., Sun, Z., Zhou, Y., Wang, Y., & Liu, W. (2020). Prevalence and predictors of PTSS during COVID-19 outbreak in China hardest-hit areas: Gender differences matter. *Psychiatry Research*, *287*, 112921. https://doi.org/10.1016/j.psychres.2020.112921

McDougall, T. (2016). *Children and Young People's Mental Health*. Children and Young People's Mental Health. https://doi.org/10.4324/9781315690223

Mikolajczyk, R. T., Maxwell, A. E., El Ansari, W., Naydenova, V., Stock, C., Ilieva, S., Dudziak, U., & Nagyova, I. (2008). Prevalence of depressive symptoms in university students from Germany, Denmark, Poland and Bulgaria. *Social Psychiatry and Psychiatric Epidemiology*, *43*(2), 105–112. https://doi.org/10.1007/s00127-007-0282-0

Naeem, B., Aqeel, M., & de Almeida Santos, Z. (2021). Marital Conflict, Self-Silencing, Dissociation, and Depression in Married Madrassa and Non-Madrassa Women: A Multilevel Mediating Model. *Nature-Nurture Journal of Psychology*, *1*(2), 1–11.

Nafees, M., & Khan, F. (2020). Pakistan's response to COVID-19 pandemic and efficacy of quarantine and partial lockdown: A review. In *Electronic Journal of General Medicine* (Vol. 17, Issue 6). https://doi.org/10.29333/ejgm/7951

Odriozola-González, P., Planchuelo-Gómez, Á., Irurtia, M. J., & de Luis-García, R. (2020). Psychological effects of the COVID-19 outbreak and lockdown among students and workers of a Spanish university. *Psychiatry Research*, *290*, 113108. https://doi.org/10.1016/j.psychres.2020.113108

Peterman, A., Potts, A., O'donnell, M., Thompson, K., Shah, N., Oertelt-Prigione, S., & Van Gelder, N. (2020). Pandemics and Violence Against Women and Children. *Center for Global Development Working Paper*, *528*.

Qiu, J., Shen, B., Zhao, M., Wang, Z., Xie, B., & Xu, Y. (2020). A nationwide survey of psychological distress among Chinese people in the COVID-19 epidemic: Implications and policy recommendations. *General Psychiatry*, *33*(2), e100213. https://doi.org/10.1136/gpsych-2020-100213

Rajkumar, R. P. (2020). COVID-19 and mental health: A review of the existing literature. *Asian Journal of Psychiatry*, *52*, 102066. https://doi.org/10.1016/j.ajp.2020.102066

Rodríguez-Rey, R., Garrido-Hernansaiz, H., & Collado, S. (2020). Psychological Impact and Associated Factors During the Initial Stage of the Coronavirus (COVID-19) Pandemic Among the General Population in Spain. *Frontiers in Psychology*, *11*(5), 1729. https://doi.org/10.3389/fpsyg.2020.01540

Roy, D., Tripathy, S., Kar, S. K., Sharma, N., Verma, S. K., & Kaushal, V. (2020). Study of knowledge, attitude, anxiety & perceived mental healthcare need in Indian population during COVID-19 pandemic. *Asian Journal of Psychiatry*, 102083.

Salman, M., Asif, N., Mustafa, Z. U., Khan, T. M., Shehzadi, N., Hussain, K., Tahir, H., Raza, M. H., & Khan, M. T. (2020). Psychological Impact of COVID-19 on Pakistani University Students and How They Are Coping. *MedRxiv*, 2020.05.21.20108647. https://doi.org/10.1101/2020.05.21.20108647

Savage, M. J., James, R., Magistro, D., Donaldson, J., Healy, L. C., Nevill, M., & Hennis, P. J. (2020). Mental health and movement behaviour during the COVID-19 pandemic in UK university students: Prospective cohort study. *Mental Health and Physical Activity*, *19*, 100357. https://doi.org/10.1016/j.mhpa.2020.100357

Schäfer, S. K., Sopp, M. R., Schanz, C. G., Staginnus, M., Göritz, A. S., & Michael, T. (2020). Impact of COVID-19 on Public Mental Health and the Buffering Effect of a Sense of Coherence. *Psychotherapy and Psychosomatics*, 1–7. https://doi.org/10.1159/000510752

Shuja, K. H., Aqeel, M., Jaffar, A., & Ahmed, A. (2020a). Covid-19 pandemic and impending global mental

health implications. *Psychiatria Danubina*, *32*(1), 32–35. https://doi.org/10.24869/psyd.2020.32

Shuja, K. H., Aqeel, M., Jaffar, A., & Ahmed, A. (2020b). Covid-19 pandemic and impending global mental health implications. In *Psychiatria Danubina* (Vol. 32, Issue 1, pp. 32–35). https://doi.org/10.24869/psyd.2020.32

Shuja, K. H., Shahidullah, Aqeel, M., Khan, E. A., & Abbas, J. (2020). Letter to highlight the effects of isolation on elderly during COVID-19 outbreak. In *International Journal of Geriatric Psychiatry* (Vol. 35, Issue 12, pp. 1477–1478). https://doi.org/10.1002/gps.5423

Stadtfeld, C., Vörös, A., Elmer, T., Boda, Z., & Raabe, I. J. (2019). Integration in emerging social networks explains academic failure and success. *Proceedings of the National Academy of Sciences of the United States of America*, *116*(3), 792–797. https://doi.org/10.1073/pnas.1811388115

Stewart-Brown, S., Janmohamed, K., & Parkinson, J. (2008). *Warwick-Edinburgh Mental Wellbeing Scale: User Guide Version 1. NHS Health Scotland, University of Warwick and University of Edinburgh*.

Sturman, D. A., & Moghaddam, B. (2011). The neurobiology of adolescence: Changes in brain architecture, functional dynamics, and behavioral tendencies. *Neuroscience and Biobehavioral Reviews*, *35*(8), 1704–1712. https://doi.org/10.1016/j.neubiorev.2011.04.003

Swick, S. D., Dechant, E., & Jellinek, M. S. (2002). Children of victims of September 11th: A perspective on the emotional and developmental challenges they face and how to help meet them. *Journal of Developmental and Behavioral Pediatrics*, *23*(5), 378–384. https://doi.org/10.1097/00004703-200210000-00013

Toqeer, S., Aqeel, M., Shuja, K. H., Bibi, D. A., & Abbas, D. J. (2021). Attachment Styles, Facebook Addiction, Dissociation and Alexithymia in University Students; A Mediational Model. *Nature-Nurture Journal of Psychology*, *1*(1 SE-), 28–37. https://thenaturenurture.org/index.php/psychology/article/view/2

Townsend, T., & Bates, R. (2006). Teacher Education in a New Millennium: Pressures and Possibilities. In *Handbook of Teacher Education* (pp. 3–22). Springer. https://doi.org/10.1007/1-4020-4773-8_1

UNESCO. (2020). School closures caused by Coronavirus (Covid-19). In *Unesco*. https://en.unesco.org/covid19/educationresponse

van Gelder, N., Peterman, A., Potts, A., O'Donnell, M., Thompson, K., Shah, N., & Oertelt-Prigione, S. (2020). COVID-19: Reducing the risk of infection might increase the risk of intimate partner violence. *EClinicalMedicine*. https://doi.org/10.1016/j.eclinm.2020.100348

Vindegaard, N., & Eriksen Benros, M. (2020). COVID-19 pandemic and mental health consequences: Systematic review of the current evidence. *Brain, Behavior, and Immunity*. https://doi.org/10.1016/j.bbi.2020.05.048

Wang, C., Pan, R., Wan, X., Tan, Y., Xu, L., Ho, C. S., & Ho, R. C. (2020). Immediate psychological responses and associated factors during the initial stage of the 2019 coronavirus disease (COVID-19) epidemic among the general population in China. *International Journal of Environmental Research and Public Health*, *17*(5), 1729.

Weissbourd, R. (2003). Moral teachers, moral students. *Educational Leadership*, *60*(6), 6–11.

Yao, H., Chen, J. H., & Xu, Y. F. (2020). Patients with mental health disorders in the COVID-19 epidemic. *The Lancet Psychiatry*, *7*(4), e21. https://doi.org/10.1016/S2215-0366(20)30090-0

Zhai, Y., & Du, X. (2020). Mental health care for international Chinese students affected by the COVID-19 outbreak. *The Lancet Psychiatry*, *7*(4), e22.

Zhang, Y., & Ma, Z. F. (2020). Impact of the COVID-19 pandemic on mental health and quality of life among local residents in Liaoning Province, China: A cross-sectional study. *International Journal of Environmental Research and Public Health*, *17*(7), 2381. https://doi.org/10.3390/ijerph17072381

Zhou, S. J., Zhang, L. G., Wang, L. L., Guo, Z. C., Wang, J. Q., Chen, J. C., Liu, M., Chen, X., & Chen, J. X. (2020). Prevalence and socio-demographic correlates of psychological health problems in Chinese adolescents during the outbreak of COVID-19. *European Child and Adolescent Psychiatry*, *29*(6), 749–758. https://doi.org/10.1007/s00787-020-01541-4

Publisher's Note