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## Impact Of Mindfulness-Based Stress Reduction Intervention On Psychological Distress Among Youth

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### ABSTRACT

The purpose of the current study is to determine the impact of Mindfulness-based Stress Reduction Intervention on psychological distress among youth. The research design was a pre-post randomized control design. For this purpose, participants (age range:15-24years) were randomly assigned to control (n=60) and intervention groups (n=60) after a baseline assessment of psychological distress. MBSR was practiced by participants for 8 weeks in the intervention group with no intervention given to the control group (waitlist). At the end of the intervention, participants in both groups were assessed (post-intervention). Furthermore, the intervention group was assessed after 3 months (follow-up). Analysis of the data using repeated measure ANOVA revealed that participants scored higher at pre-intervention as compared to post-intervention and follow-up ( $p < .001$ ). In addition, it was found that participants in the control group were significantly higher in psychological distress as compared to the intervention group ( $p < .05$ ). These findings concluded that MBSR is an effective intervention to reduce psychological distress among youth which implies that higher education institutions should introduce such kind of interventions to help students deal with the ongoing stressors of their lives.

**Keywords.** Mindfulness based Stress Reduction Intervention, Psychological distress, Randomized Controlled Trial, Pre-Intervention, Post-Intervention, Follow-up

### INTRODUCTION

Pakistan is one of the youngest countries in the area, with over 30% of the population being between the ages of 15 and 29 years (UNDP,2017). With two-thirds of its population under 30, Pakistan is among the world's youngest countries as of 2022 and is currently the sixth most populous country in the world (British Council,2023). By 2030, our population will have increased to almost 280 million, of which 100 million will be made up entirely of young people (The Friday Times,2022).

Over the past 20 years, Pakistan has experienced multiple major crises and has had limited resources for education and healthcare. The country was shocked by a big earthquake in 2005, and there were big floods in 2010. From 2000 to 2014, there was an ongoing wave of terrorism and militancy that affected even schools and universities. With over 100 students killed, the 2014 terrorist attack on the Army Public School in Peshawar stands as the terrorist attack with the highest death toll ever. In 2016, terrorists attacked a university in Khyber Pakhtunkhwa, resulting in the deaths of 19 students and staff personnel (Khan et al.,2021).

A whole generation in Pakistan has grown up in an environment of instability and fear. Pakistani university students have to deal with a highly competitive environment, financial constraints, uncertainty about the future, and expectations from their parents and society to excel academically and obtain acceptable employment. University students are particularly vulnerable to typical mental health conditions, such as depression, as a result of all these stressors (Khan et al.,2021).

In this regard, de-Vibe et al., (2012) argued that today's world is rife with stress. Even though it can drive some people to respond positively to it, it usually has a negative effect. Stress can be fatal in its most extreme forms. Stress is internally generated, even though life's demands are external, and stressors might be imagined or actual.

Psychological distress is characterized as an emotional state of discomfort, exemplified by anxiety symptoms such as tension and restlessness and depression symptoms like sadness, loss of interest, and hopelessness (Mirowsky & Ross,2002).

Furthermore, another definition of psychological distress was given by Potter (2007) it is a behavioral, affective, and cognitive response to a situation that is triggered by a crisis, perceived as dangerous, and accompanied by symptoms of depression and anxiety. The stress-distress model, in particular, postulated that experiencing a stressful event that affects one's mental or physical health, being unable to cope with the stressful event, and experiencing the ensuing emotional turmoil are the primary symptoms of psychological distress (Horwitz,2007; Ridner,2004).

From a cognitive standpoint, elevated stress levels and dysfunctional behaviors in individuals can be attributed to a misinterpreted or maladaptive perception of their events. This theory's main tenet is that emotional problems arise when a

person's perception of a situation exceeds the evidence that is currently available. This negative interpretation of the situation then feeds back into a vicious cycle that negatively impacts people's behavior and emotions (Mabitsela,2003). Thus, psychological stress harms a person's mental health, which in turn negatively impacts the person's entire existence.

Thus, there is a crucial need to implement some intervention programs for the youth so that they can more effectively handle the challenging conditions in their lives. Therefore, the present study has selected the Mindfulness-Based Stress Reduction Intervention (MBSR) as one such intervention.

In modern Western psychology, mindfulness is defined in different ways. One such definition is similar to the idea of proper concentration given by Buddhists. It is well-defined as consciousness acquired using purposeful, nonjudgmental attention to the present moment (Kabat-Zinn,2003).

Furthermore, according to Bishop et al. (2004), mindfulness is described as a process that leads to a psychological state characterized by a non-evaluative understanding of one's thoughts, consciousness, physical state, sensations, and environment while valuing acceptance, curiosity, and openness.

A two-dimensional model was given with the first as attention regulation rather than avoiding or suppressing the emotions, or amplifying and becoming absorbed in the details, while the second dimension constitutes acceptance of an open, inquisitive, and accommodating mindset that is non-judgmental towards bad and good both kind of events (Bishop et al.,2004).

Although the theoretical and cultural foundations of mindfulness are found in the Buddhist tradition, the concept initially made its appearance in western psychiatric and medical therapies as part of the "third wave" of cognitive-behavioral therapy (Chin & Hayes,2017).

According to Chandrasekara (2018) in the western community, mindfulness is the most effective approach to reduce stress. The two most widely used mindfulness therapies according to Segal et al. (2002) are Mindfulness-Based Stress Reduction (MBSR) and Mindfulness-Based Cognitive Therapy (MBCT). These mindfulness-based programs improve young people's emotional intelligence while notably reducing depression and stress.

Regular meditation practice increases mindfulness abilities during the 8-week MBSR program, which aims to lower stress. This intervention consists of two to three hours of weekly group meditation sessions led by a qualified instructor, daily audio-guided meditation at home for nearly 45 minutes each day, and a one-day mindfulness retreat in the sixth week. The course material for Mindfulness-Based Stress Reduction (MBSR) focuses on teaching students how to employ various mind-body meditation techniques, such as body scans, yoga, gentle stretching, and sitting meditation, to attend thoughtfully to bodily sensations. In addition, the group sessions foster discussion on how to apply these mindful techniques in daily life, which will ultimately lead to a more adaptive ability to handle pressures (Kabat-Zinn,1982).

Further, it was mentioned by Kabat-Zinn (1982) that MBSR was first created to help individuals with illnesses like chronic pain. However, MBSR has been used with groups of people who are medical and psychiatric patients as well as community members (Ludwig & Kabat-Zinn,2008). MBSR has consistently shown to be quite effective with these various populations, resulting in higher rates of compliance, patient satisfaction, tolerability, and program completion (Baer,2003; Khoury et al.,2013).

The sessions on a weekly basis also integrate mental and physical exercises that encourage alertness. Among them are body scan exercises, in which individuals sit or lie still and pay "neutral attention" to sensations originating from different body parts, put differently, they observe these feelings without making an effort to reach a certain objective. Using breathing as an anchor for attention, physical exercises that emphasize awareness of body sensations, and mental exercises that focus attention on breathing are some ways to practice being fully aware throughout everyday activities. The nourishment of a non-reactive and accepting attitude toward what an individual interprets in every moment is significant to all the dimensions of the program. In addition to the exercises, there is discussion and information on stress, stress management, and applying mindfulness in daily life and interpersonal interactions. Further participants are encouraged to use the guided activities (body-scanning, breathing-focused mindfulness sitting exercise, and yoga stretching exercises) and audiotapes to practice for 30 to 45 minutes per day outside of sessions (de-Vibe et al.,2012).

Regarding the efficiency of MBSR, it was concluded that MBSR has a long-term positive effect on psychological distress reduction because it has been shown in various patient samples to significantly increase well-being, health-related quality of life, and functional status in addition to reducing physical symptoms and psychological distress (Reibel et al.,2001).

A research study was carried out by Nyklicek and Kuijpers (2008) to examine the mediating function of mindfulness while differentiating the effects of the control group and MBSR. Results indicated that MBSR significantly decreased perceived stress and vital exhaustion.

Additionally, another research was carried out with medical students to find out how an 8-week mindfulness practice affected their stress levels. Assessment of the participants was carried out at pre-intervention, post-intervention (8 weeks), and follow-up (16 weeks) after the completion of intervention. Scores on anxiety and perceived stress dimensions of psychological distress were decreased at post-intervention with the changes remaining stable at follow-up (Warnecke et al., 2011).

Another meta-analysis and systematic review was conducted to investigate the impact of mindfulness-based intervention on the mental and physical health of university students. It was revealed from the analysis that interventions based on mindfulness had reduced distress, depression, anxiety, and rumination, as well as improved mindfulness, and wellbeing with a small to moderate effect size (Dawson et al., 2019).

So the rationale for conducting the present study was the argument that there are very few researchers that have studied the impact of this intervention on youth although studies with adult population are available (Sibinga et al.,2011; Sibinga et al., 2015). Therefore, it is recommended to investigate the effect of MBSR on youth as they can be involved in techniques of mind-body meaningfully (Vohra et al.,2018). So keeping in view the recommendations given by earlier researchers, the

present study was conducted to investigate the impact of MBSR on psychological distress among youth. Furthermore, no reported literature has been found on the effect of MBSR on psychological distress in the cultural context of Pakistan. The objective of the present study was to determine the impact of mindfulness based intervention on psychological distress among youth. In addition, the study aimed to assess the differences in terms of psychological distress between the control and intervention groups at time 1 (pre-intervention) and time 2 (post-intervention) among youth.

## METHODS

### *Study design*

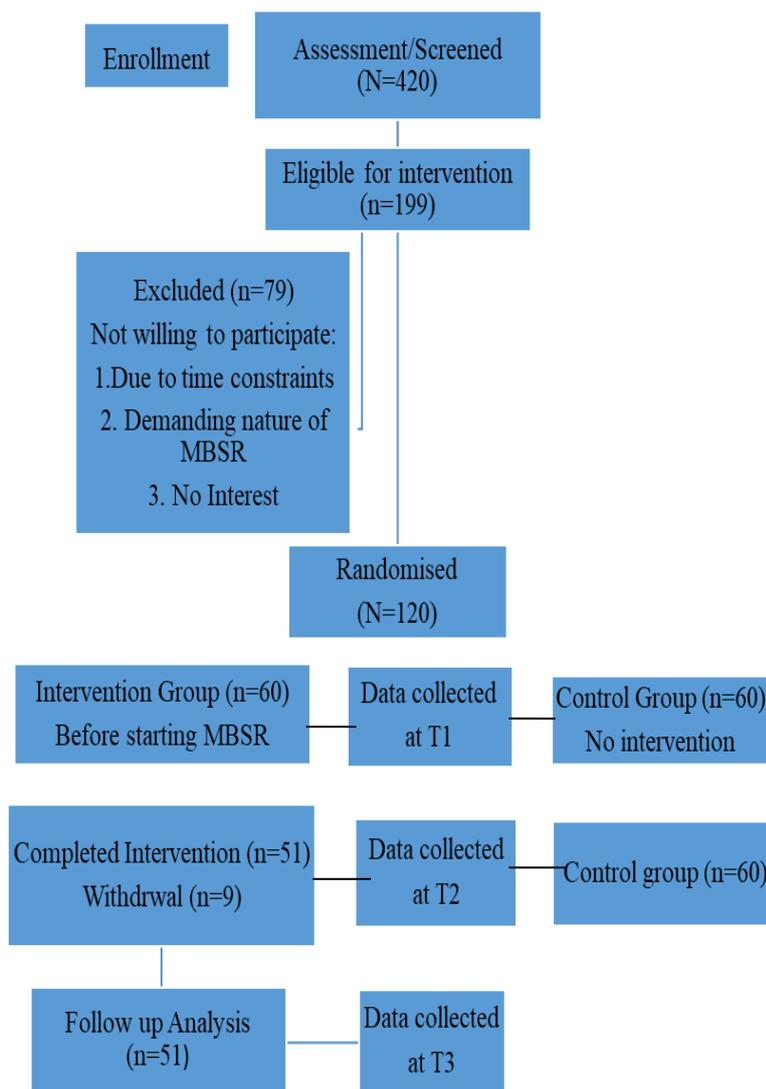
The present study was an intervention study with a pre-posttest randomized control design. The study was approved by the Fatima Jinnah Ethics Committee (FJWU/EC/2022/46). Participants were informed about the purpose of the study and informed consent was taken before recruiting the participants.

### *Participants*

The present study was carried out with youth in the two major districts of Khyber Pakhtunkhwa province of Pakistan. G-Power was used for sample size estimation. The recommended sample size was a minimum of 102 participants with approximately 51 participants in each group ( $\alpha=0.05$ , effect size=0.5, and  $\beta=0.80$ ) for the one-tailed hypothesis. For this purpose, a total of 420 participants were assessed on the variable of psychological distress to screen out for intervention. A total of 199 (47.4%) participants fulfilled the eligibility criteria of mild-moderate psychological distress. Participants with extreme psychological distress were recommended for clinical assessment. 120 participants (60.3%) gave their consent to be part of the intervention. The age range from 15-24 was considered as per the World Health Organization (WHO) definition of youth. Participants below or above the age range (as recommended by WHO) were excluded. Further participants with any significant reported medical disease or any diagnosed psychological disorder were also excluded.

### *Procedure*

Participants were randomized to control (n=60) and intervention group (n=60). A baseline assessment was done before randomly assigning them to the groups. For this purpose, Depression, Anxiety, and Stress Scale (DASS-21; Lovibond & Lovibond, 1995) was administered. This measure assesses psychological distress in terms of stress, depression, and anxiety with 7 items for each subscale. Higher scores on DASS reflect a higher level of psychological distress. The scale is in the public domain so permission was not required. Afterward, WhatsApp groups were created to interact with the participants. Subsequently, participants in the intervention group were given Mindfulness-Based Stress Reduction Intervention (MBSR) training via online mode as all the participants reported that it would be difficult for them to give time in university/college timings due to the demanding nature of the semester system. So to entertain the participants up to the maximum online mode was chosen. The MBSR course is available online at <https://palousemindfulness.com/>. The researcher also took the online course from the website. All the practice sheets (formal and informal), audio/video guided practices/ reading materials were downloaded by the researcher. Weekly, one group session was conducted at the start of the week where all the participants were given comprehension regarding the readings of the week. In addition, in every group session orientation with the respective week, videos were also given to make it more clear to them. Afterwards each week practices were individually practiced by the participants and the experiences were shared with the researcher. At the end of each week, formal and informal sheets were shared by the participants before getting the instructions for the next week. All the participants were given reminders daily to practice and fill out the formal and informal practice sheets. Those individuals who reported any distress while practicing were provided counseling. After 8 weeks at the end of the training, both participants in the MBSR group and those in the control group were asked again to complete the questionnaire assessing psychological distress. A total of 51 among 60 participants completed the intervention with a response rate of 85%. On the other hand, participants in the control group were not provided with any intervention during these 2 months however after post assessment they were offered the intervention, and those who were interested were also given the intervention. No dropout was reported in the control group at post-intervention. Follow-up assessment after 3 months was done only with the intervention group. All the participants were ensured the confidentiality of their responses and were briefed about the purpose and use of their research data. The study registration was also done at ClinicalTrials.gov (NCT05653739). Fig 1 shows the consort diagram:



**Statistical Analysis**

Descriptive statistics were used to determine the sample characteristics. Cronbach’s alpha was used to estimate the reliability of the scale. Chi-square test of contingencies ( $\chi^2$ ) was carried out to analyze demographic differences between control and intervention groups. An independent sample t-test was used to assess differences between control and intervention groups at baseline and post-intervention. For analyzing the impact of MBSR on psychological distress repeated measure ANOVA was carried out to investigate differences in pre-intervention, post-intervention, and follow-up phase.

**RESULTS**

Demographic analysis illustrated that 14 (23.3%) males, and 46(76.7%) females were part of the control group (T1 &T2) while 12 (20%) were males and 48 (80%) females were in the intervention group at time-1. 4 (7.8%) males and 47 (92.1%) were females in intervention groups at T2 and T3. About the family system, it was found that in the control group 30 (50%) were in nuclear families and 30(50%) were in joint families. 36 (60%) were in nuclear families while 24 (40%) were in joint families at T1 in the intervention group. In addition, 33 (64.7%) were in nuclear families and 18 (35.3%) were in joint families at T2 and T3 in the intervention group. In the control group, 5 (8.33%) reported recent traumatic experiences at T1, while 55 (91.6%) reported no trauma. At T2 in the control group, 7 (11.77%) reported recent traumatic experiences and 53 (88.3%) reported no traumatic experiences recently. 11(18.3%) had recent trauma while 49(81.7%) had no traumatic experiences recently in the intervention group at T1. At T2 the frequency of recent trauma was 12 (23.5%) and 39(76.4%) reported no trauma. At T3, 9 (17.6%) had recent trauma and 42 (82.4%) had no traumatic experiences. Finally, at T1 in the control group, 16(26.6%) had recent economic losses and 44(73.3%) had no economic loss recently. At T2 12 (20%) reported recent economic losses while 48 (80%) reported no economic losses. For intervention, group 8(13.3%) had reported economic loss at T1 while 52(86.7%) reported no economic losses. At T2 8 (15.6%) were with economic losses while 43(84.3%) were without economic losses. The number of participants who reported economic losses at T3 was 9(17.6%) and those without economic losses recently were 42(82.4%). Table 1 shows the details of sample characteristics.

**TABLE 1.** Details of sample characteristics for control and intervention groups (N=120)

Sample Characteristics	Category	Control Group (n=60)				Intervention Group (n=60)					
		T1 (n=60)		T2 (n=60)		T1 (n=60)		T2 (n=51)		T3 (n=51)	
		f	%	f	%	f	%	f	%	f	%
Gender	Male	14	23.3	14	23.3	12	20	4	7.8	4	7.8
	Female	46	76.7	46	76.7	48	80	47	92.1	47	92.1
Family System	Nuclear	30	50.0	30	50.0	36	60	33	64.7	33	64.7
	Joint	30	50.0	30	50.0	24	40	18	35.3	18	35.3
Recent Traumatic Experiences	Yes	05	8.33	07	11.7	11	18.3	12	23.5	9	17.6
	No	55	91.6	53	88.3	49	81.7	39	76.4	42	82.4
Recent Economic Losses	Yes	16	26.6	12	20.0	08	13.3	08	15.6	9	17.6
	No	44	73.3	48	80.0	52	86.7	43	84.3	42	82.4

Note. T1=Pre-intervention; T2=Post-intervention; T3= Follow-up; f=frequency; %=percentage

Furthermore Chi-square test of contingencies ( $\chi^2$ ) was carried in order to determine the baseline differences among participants on the basis of gender, recent traumatic experiences, and economic losses. The non-significant value of  $\chi^2(1) = 1.96$  ( $p > .05$ ) suggested that participants were not different on the basis of gender at baselines. For recent traumatic experiences, no differences were illustrated  $\chi^2(1) = 1.90$  with  $p > .05$ . Similarly, there were no differences  $\chi^2(1) = 3.33$ ,  $p > .05$  between control and intervention groups on recent economic losses. Furthermore, before running the analysis reliability was also estimated for DASS-21 (Lovibond & Lovibond, 1995). Table 2 shows the Cronbach's alpha reliability estimates of DASS-21 and its subscales.

**TABLE 2.** Cronbach's alpha reliability estimates of DASS-21 (N=120)

Instruments	Items	Control Group		Intervention Group		
		T1 n=60		T2		T3
		$\alpha$	$\alpha$	$\alpha$	$\alpha$	$\alpha$
DASS-21	21	.88	.92	.91	.91	.92
Stress	7	.75	.82	.80	.76	.81
Depression	7	.68	.82	.85	.84	.85
Anxiety	7	.62	.76	.68	.77	.78

Note. T1=Pre-intervention; T2=Post-intervention; T3= Follow-up

Baseline differences were also investigated in psychological distress and its subscales by carrying out an independent sample t-test. Table 3 shows differences in psychological distress between control and intervention groups at baseline.

**TABLE 3.** Differences in Psychological distress among youth at baseline (N=120)

Variables	Control (n=60)		Intervention (n=60)		t(df)	p	95% CI		Cohen's d
	M	SD	M	SD			LL	UL	
Psychological distress	49.96	22.45	51.11	25.56	-.26(117)	.79	-9.88	7.58	.05
Stress	18.33	9.03	17.26	9.03	.65(118)	.52	-2.20	4.33	.12
Depression	15.26	9.50	17.01	10.44	-.95(117)	.34	-5.38	1.87	.17
Anxiety	16.13	7.39	16.73	8.28	-.42(118)	.67	-3.44	2.24	.08

Note. M= Mean; SD=Standard deviation; df=degree of freedom; p=level of significance; CI = Confidence Interval; LL = Lower Limit; UL = Upper Limit; Cohen's d= effect size

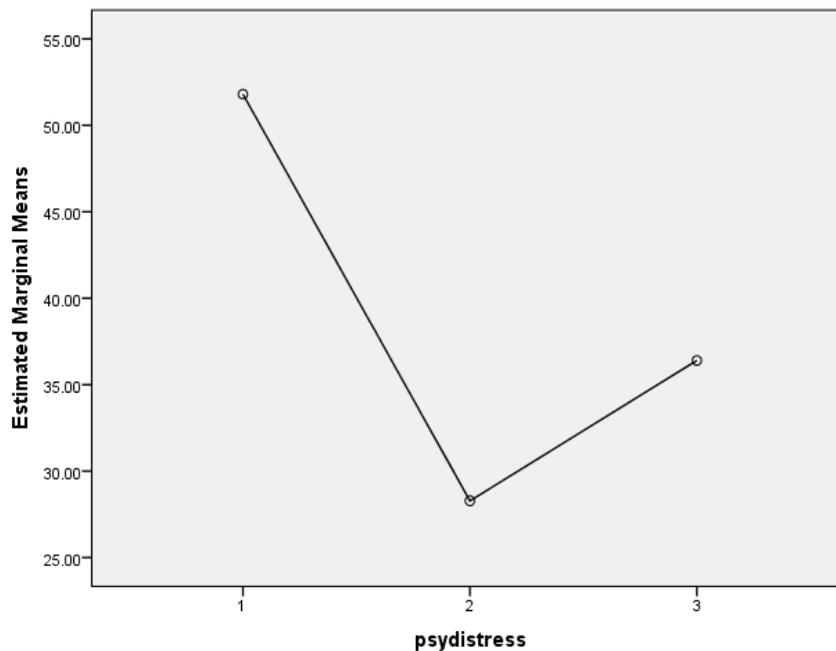
Table 3 shows that no significant differences were found between control and intervention groups on psychological distress which ensures that participants in both groups were not different so any variations in psychological distress at post-intervention could be attributed to MBSR. Thus to find the impact of MBSR on psychological distress among youth one-way repeated measure ANOVA was used. Before running the analysis all the assumptions were checked. Table 4 shows the one-way ANOVA statistics for psychological distress.

**TABLE 4.** Means, Standard Deviations, and One-way ANOVA statistics for Psychological distress (n=60)

Variables	Pre-intervention (T1) n=60		Post-intervention (T2) n=51		Follow-up (T3) n=51		F	df	η <sup>2</sup>
	M	SD	M	SD	M	SD			
	Psychological distress	51.80	26.64	28.28	18.69	36.40			
Stress	17.56	9.32	9.92	6.42	13.41	8.17	20.05***	2,100	.29
Depression	17.12	10.82	8.16	7.18	10.56	8.25	23.78***	1,52,74.6	.32
Anxiety	16.98	8.64	10.27	6.96	12.31	7.35	16.72***	1,53,76.5	.25

Note. \*\*\*p<.001, df = Degree of Freedom; η<sup>2</sup> = Partial Eta Squared.

Significant differences were found in the pre-intervention, post-intervention, and follow-up phases ( $F(1,67,79.5) = 25.59$ ,  $p < .001$ ) with  $\eta^2 = .34$  which suggested a large effect size. Similarly, significant differences were found on stress ( $F(2,100) = 20.05$ ,  $p < .001$ ) with a large effect size  $\eta^2 = .29$ . In addition, significant differences were found on depression ( $F(1,52,74.6) = 23.78$ ,  $p < .001$ ) with  $\eta^2 = .32$  suggested a larger effect size. Finally, for the subscale of anxiety significant differences were illustrated at the pre-intervention, post-intervention, and follow-up phase ( $F(1,53,76.5) = 16.72$ ,  $p < .001$ ) with  $\eta^2 = .25$  suggested a larger effect size. Pairwise comparisons further revealed that before intervention participants scored higher on psychological distress ( $M = 51.80$ ,  $SD = 26.64$ ) as compared to after intervention ( $M = 28.28$ ,  $SD = 18.69$ ). For follow-up data it was found that scores on psychological distress were lower than ( $M = 36.40$ ,  $SD = 21.95$ ) at pre-intervention ( $M = 51.80$ ,  $SD = 26.64$ ), however, it was higher than at post-intervention ( $M = 28.28$ ,  $SD = 18.69$ ) suggested that the effect of MBSR did not remain same till follow-up. For stress, depression, and anxiety same trends were revealed through pairwise comparison. Fig 2 also illustrated differences in pre-intervention, post-intervention, and follow-up.



In addition, for assessment of the difference between the control and intervention groups on psychological distress, an independent sample t-test was conducted. All the assumptions of the test were checked. Table 5 shows the comparison between the control and intervention groups.

**TABLE 5.** Post Intervention differences between control and intervention groups on psychological distress among youth (N=111)

Variables	Control (n=60)		Intervention (n=51)		t(df)	p	95% CI		Cohen's d
	M	SD	M	SD			LL	UL	
Psychological distress	37.10	25.52	28.31	18.50	2.09(106.5)	.04	.47	17.09	.39
Stress	12.83	9.33	9.92	6.42	1.94(104.7)	.06	-.07	5.89	.36
Depression	11.96	9.27	8.11	7.11	2.47(107.9)	.01	.76	6.94	.47
Anxiety	12.30	8.93	10.27	6.96	1.31(108.2)	.19	-1.02	5.08	.25

Note. M= Mean; SD=Standard deviation; df=degree of freedom; p=level of significance; Cohen's d= effect size

Table 5 shows that significant differences were found in psychological distress between the control and intervention groups ( $p < .05$ ). Mean values indicated that at post-intervention mean scores on psychological distress were higher in the control

group ( $M=37.10$ ,  $SD=25.52$ ) in comparison to the intervention group ( $M=28.31$ ,  $SD=18.50$ ). For the subscales of stress and anxiety, no significant differences were found ( $p>.05$ ) while participants in control and intervention groups significantly differed on depression ( $p<.05$ ).

## DISCUSSION

The present study was conducted to investigate the effect of mindfulness based stress reduction intervention (MBSR) on psychological distress among youth. It was a pre-post randomized control trial. For this purpose, 420 participants were screened out initially. 199 (47.4%) were found to have psychological distress. The prevalence rate of psychological distress found in the present study was in line with Syed et al. (2018) which reported the frequency of stress, depression, and anxiety as high as 53.2%, 48%, and 68.54%, among students of physiotherapy. Similarly, another study carried out by Asif et al. (2020) with university students reported a prevalence rate of 69.2% for mild-moderate stress, 23.8% for mild-moderate anxiety, and mild-moderate depression was 51.8%. After the initial screening participants were randomized to control ( $n=60$ ) and intervention groups ( $n=60$ ). The current study had a larger sample size than the other intervention studies (Chaleshtori et al., 2021; Demarzo et al., 2014; Nyklicek & Kuijpers, 2008). The dropout rate at the post-intervention and follow-up phases in the intervention group was 15% which was in line with research conducted by Kimbrough et al. (2010) and Nyklicek et al. (2012). Regarding gender representation, it was found that the frequency of females was higher as compared to males as in other studies (Demarzo et al., 2014; Nila et al., 2016). Analysis of reliability also revealed that values were within the range as recommended by Allen et al. (2014) and Hansjosten (2015). Furthermore, before conducting the intervention, baseline assessment was carried out that revealed no differences between control and intervention groups on demographic variables and psychological distress. The baseline assessment is recommended for randomized control trials as it enhances the reliability and statistical efficiency of the conclusions drawn from such studies (Holmberg & Andersen, 2022). After conducting 8-week MBSR with the participants from the intervention group one-way repeated measure ANOVA was used which revealed a significant decrease in psychological distress among participants as a result of MBSR. These findings were supported by literature (An et al., 2022; Pan et al., 2024; Song & Lindquist, 2015). Although scores on psychological distress were higher at follow-up in comparison with post-intervention which determined the effect of MBSR did not remain the same during the follow-up period (3 months) however research carried out with a follow-up period of 6 months also revealed the same (Erogul et al., 2014). On the other hand, the effect of MBSR remains sustained in studies carried out at 24-week follow-up (Kimbrough et al., 2010) and 16 weeks' follow-up (Warnecke et al., 2011). The reason for these contradictory findings in the present study could be that the participants might not have practiced MBSR at the follow-up period which had increased their psychological distress from the post-intervention phase. Furthermore, differences between control and intervention groups were assessed using an independent sample t-test which revealed that participants in the control group scored higher on psychological distress as compared to the intervention group with small to medium effect size. These findings further supported the efficacy of MBSR in reducing psychological distress because participants in the control group did not receive any intervention during the 2 months while participants in the intervention group practiced MBSR which helped them to reduce their psychological distress by increasing the acceptance of the challenging situation and responding adaptively.

## Ethical Considerations

Before initiating the study ethical approval from the institutional review board was taken. Participants were individually briefed about the purpose and nature of the study and they were ensured of the confidentiality of their data. In addition, they were given the right to withdraw at any phase during the research. The allocation of participants to control and intervention groups was done via Microsoft Excel using coding for participants rather than other identifying information so that biasness could not affect the allocation of participants.

## Implications

The findings of the present study were very significant because it has theoretical implications specifically concerning Pakistani culture as there is no reported literature concerning MBSR and its effect on psychological distress among the youth. So the findings of the present study are helpful for future researchers to explore the efficacy of intervention with other populations, as well as with youth in more detail. In addition, the current study has practical implications. Introducing such kinds of interventions for the youth will help them to deal with psychological distress as youth is the asset of a nation and distress among them is negatively affecting their psychological health which in turn can lead to failures in different life domains. So when a person is aware of mindfulness and its benefits they will be better able to practice it and deal with the stressors of life. Furthermore, the findings of the study also imply that MBSR is an effective intervention to introduce at educational institutions to help students modify their perception of daily life negative experiences.

## Limitations and Recommendations

Although the study is very significant in the cultural context of Pakistan there were some limitations. For example, the mode of intervention was online due to the inability of students to practice otherwise. So future studies can be conducted in the physical mode where trained teachers and participants will have physical interactions. Further, the frequency of male participants was less than females so the generalizability of the results is limited. Future research with a more representative sample will be helpful. Furthermore, the participants in the present study were educated adults so future studies with participants from other backgrounds and age groups like professionals, adolescents, and adults with limited educational backgrounds will be beneficial.

## CONCLUSION

The findings of the present study provided important insight into the efficacy of mindfulness based stress reduction intervention among youth. The study shows that mindfulness based stress reduction intervention can decrease psychological distress among youth. So such kinds of interventions should be introduced for otherwise healthy adults to help them deal with stress. These results highlighted the significance of assessing the youth of the region and providing them with timely interventions so that the risk of development of mental health issues could be reduced.

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