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RESEARCH PAPER

Healing the Caregivers: Therapeutic Effectiveness of Mindfulness-Based Stress Reduction for Psychological Morbidity in Parents of Children with Developmental Disabilities

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ABSTRACT

This study looks at the efficacy of the Mindfulness-Based Stress Reduction (MBSR) program in reducing psychological stress for parents of children with all developmental disabilities. A one–group pre test – post test quasi experimental design was used. Participants in the MBSR intervention program for 8 weeks were the 35 parents (25-45 years) who were in the sample. The Depression Anxiety Stress Scales (DASS-21) were used to measure psychological distress before and after intervention. Paired sample t-tests were used to analyze data. The findings showed that the intervention was effective in lowering depression, anxiety, and stress. Depression scores significantly lowered, $t(34) = 6.36$, $p < .001$, anxiety scores reduced, $t(34) = 6.13$, $p < .001$, and stress scores also decreased, $t(34) = 5.68$, $p < .001$. The values of skewness and kurtosis were within normal limits, while Cronbach's alpha for internal consistency was from .88 to .99, which was also excellent. The general results indicated that MBSR could be beneficial to parents' psychological distress in children with DD. The findings highlight the importance of embedding mindfulness training in caregiver support programs in other, less-studied, and culturally diverse settings.

KEYWORDS Mindfulness-Based Stress Reduction (MBSR), Psychological Distress, Caregivers, Developmental Disabilities, Depression, Anxiety, Stress

Introduction

The psychological impact of developmental disabilities can be significant, particularly for parents, who not only have to suffer the impact but must deal with the burden of keeping their child's condition under control. Parents whose children have any developmental disability, such as Intellectual Disability and Down Syndrome, may need lifelong physical, emotional, financial, and social care, which can significantly impact parental health and quality of life (Hayes & Watson, 2013).In many situations, caregivers must be constantly present, control behavioral and communication issues, attend medical and educational appointments, and deal with stigma related to disability in society. Such sustained caring responsibilities increase parents' risk for emotional fatigue and psychological strain. Symptoms of psychological distress include depression, anxiety, and stress, and adversely influence a person's emotional functioning, coping, and interpersonal relationships (Lovibond&Lovibond, 1995).Parents of children with developmental disabilities have consistently been shown to report significantly more psychological distress than the parents of typically developing children (Bonis, 2016).Emotional stress, helplessness, fatigue, and decreased psychological resilience are important issues that can arise from the chronic and unpredictable nature of caregiving responsibilities. In addition, caregivers often feel socially isolated, uncertain about the child's future, and have challenges with the child's care responsibilities and personal, work, and family needs. Mothers are especially at risk of experiencing emotional issues because they are the main caregivers in families where children have developmental disabilities (Peer & Hillman, 2014).Ongoing care work stress can lead to depression, generalized anxiety, sleep problems, emotional

dysregulation, and decreased quality of life (QOL) (Cramm&Nieboer, 2011).Moreover, social support, financial constraints, and poor access to mental health services can exacerbate psychological challenges for caregivers, mainly those countries who have in low or middle income and have limited mental health resources. However, in collectivistic societies like Pakistan, social stigma about disability and mental health issues may also deter the caregivers from getting psychological help, which may worsen the emotional load and distress.With these psychological difficulties, there is a growing need for evidence-based interventions that can help children's caregivers in emotional regulation, stress reduction, and adaptive coping.A structured program that has become increasingly well-supported by empirical evidence is Mindfulness-Based Stress Reduction (MBSR), that is initially developed by Kabat-Zinn (1990) to work on psychological well-being and reduce stress.MBSR combines Mindfulness Meditation, Breathing Practices, Body Awareness, and nonjudgmental acceptance of experience in the here and now to improve emotional functioning and decrease psychological distress.Mindfulness-based interventions (MBIs) do not seek to change the unpleasant thoughts or feelings in the mind, but rather aim to become more aware, accepting, and flexible with what is happening in the mind.MBSR is effective with a variety of clinical and non-clinical populations suffering from chronic stress and emotional issues.Mindfulness-based interventions have been shown to lead to substantial decreases in depression, anxiety, and stress as well as enhanced emotional regulation and coping skills (Baer, 2003; Grossman et al., 2004).For caregiver groups, MBSR has been linked to reduced caregiver burden, resiliency, and psychological functioning (Bazzano et al., 2015).Mindfulness techniques can encourage caregivers to shift away from negative thinking styles like rumination, catastrophizing, and worry, which can minimize emotional reactivity and increase awareness of the present moment.As more self-acceptance and self-compassion are cultivated, the caregiver might be better able to handle stress and the emotional ups and downs of caregiving.While it is well established that psychological outcomes benefit from MBI, research specifically focusing on the effectiveness of MBSR in parents of children with developmental disabilities in non-Western contexts is limited.Existing research has mostly been carried out in Western populations, and results have not been widely applicable to culturally diverse populations.Given the growing psychological burden of caregiver stress in Pakistan, empirical studies on the effects of interventions that are mindfulness-based for caregiver distress are still limited.In addition, there are fewer resources for mental health treatment and stigma associated with mental health treatment that could limit access to effective caregiver support services.Thus, it is important to investigate culturally-relevant and culturally-accessible interventions, like MBSR, that can address psychological needs in underrepresented populations.This research was designed to explore the impact of Mindfulness-Based Stress Reduction (MBSR) for parents of children with developmental disabilities who were experiencing psychological distress.It was thus hypothesized that after taking part in the MBSR intervention, there could be a significant decrease in levels of depression, anxiety, and stress.

Literature Review

Parents whose children have any developmental disability exhibit greater psychological distress in comparison to those parents whose children have normal development due to the greater demands linked with their caregiving. Many conditions, like ASD, intellectual disability, and Down syndrome, require parents to constantly supervise, support, manage, and provide financial support to the individual, which can hurt parents' well-being (Hayes & Watson, 2013; Bonis, 2016). Research has repeatedly indicated that caregivers of children with developmental disabilities are more prone to stress, anxiety, depression, emotional exhaustion, and diminished quality of life due to the chronic nature of their caregiving responsibilities (Cramm&Nieboer, 2011). In Pakistan, mental health workers with children with special needs have also experienced similar emotional demands that are similar. The study by Ashfaq et al. (2026) revealed that there was a high level of emotional burden, work stress, limited resources, and psychological strain among the

professionals while providing care and support services, which further emphasized the emotional issues that are related to special needs in caregiving environments.

Various factors affect psychological morbidity in caregivers, including social and emotional issues. Parents often have difficulties understanding what the child's future will look like, they feel as though they have limited social support, they have financial concerns, and they struggle to balance the duties of being a parent with the duties of their occupations and family life (Peer & Hillman, 2014). Usually, the caregivers also suffer from social isolation and stigma surrounding their disability/mental health issues, especially in societies where psychological support is not actively sought. Such difficulties can lead to emotional dysregulation, insomnia, a decreased ability to cope with stress, and poor social skills (Lovibond&Lovibond, 1995). Mothers are particularly vulnerable as they are the first caregivers and thus, the ones who have the most caregiving strain and emotional burden (Peer & Hillman, 2014). These results are corroborated by recent evidence in Pakistan. The current study by Bano et al. (2026) aimed to examine the emotional burden, burden on families, financial burden, social isolation, and stigma faced by parents of children with Autism Spectrum Disorder (ASD) in the context of their lived experiences in the region of Gilgit-Baltistan. Parents indicated concerns about their child's future, lack of social support, and major psychological issues related to the long duration of care. The results of this study indicate that caregiver burden is a complex phenomenon in low-resource communities and the importance of care for caregivers' well-being.

Studies have accordingly become more common on caregiver stress and the interventions that can enhance emotional function and adaptive coping behavior in the parents of children with developmental disabilities. Mindfulness-Based Stress Reduction (MBSR), developed by Kabat-Zinn (1990), is one intervention that has shown some empirical support. The MBSR program is a structured therapeutic programme, combining mindfulness meditation, breathing exercises, yoga, and being present with the moment to help reduce stress and psychological issues. Research has largely concentrated on strategies to modify unhelpful thinking, but mindfulness-based interventions teach participants awareness of their thoughts and how to be more psychologically flexible and emotionally tolerant of negative thoughts and urges.

There is robust evidence demonstrating mindfulness-based interventions' effectiveness in alleviating psychological distress in the literature. Baer (2003) described how mindfulness training increases awareness, reduces reactivity to stressful encounters, and increases adaptive coping. Similarly, Grossman et al. (2004) found that by using meta-analysis, mindfulness-based stress reduction was found to be an effective intervention that significantly reduced stress, anxiety, depression, and enhanced overall emotional functioning and psychological health. The results indicate that mindfulness programs might be especially beneficial for caregivers who are under chronic emotional stress as a result of challenging care giving experience.

Specific interventions for developmental disabilities have yielded positive outcomes in the field of research that has targeted parents of children with developmental disabilities. Bazzano et al. (2015) reported that MBSR was highly effective in reducing caregiver burden and improving emotional regulation among parents/caregivers of persons with developmental disabilities. Mindfulness training was found to help improve a person's coping, self-compassion, and awareness of emotional experiences. Likewise, Neece et al. (2023) reported that Mindfulness-based interventions also reduced parenting stress, depression symptoms, and emotional exhaustion among parents of autistic children. The improvements were associated with more emotional resilience and more adaptive coping with regard to caregiving issues. The effectiveness of caregiver-based interventions for children with developmental disabilities is also supported by evidence from Pakistan. Abbas et al. (2026) found caregiver training, along with behavioral strategies and visual supports,

to be effective in improving parent–child interactions, parental confidence, and decreasing emotional and behavioral problems of a child with ASD. These results indicate the need for caregivers to be active participants in intervention programs. In the same way, behavioral interventions targeting caregivers are shown to be effective in developmental disability environments. Abbas et al. (2026) found that parent training led to an increase in caregiver competence and confidence, and a corresponding improvement in children's behavioral functioning, highlighting the importance of caregiver involvement in the effectiveness of intervention.

The second major topic in the literature is the use of Mindfulness to eliminate maladaptive cognitive patterns. Caregivers can become preoccupied with thoughts of the future, catastrophize, and have excessive thoughts about providing care. These negative thought patterns are a key factor in emotional suffering and mental exhaustion. By focusing on the here and now, rather than fearing the future and/or engaging in negative thinking, mindfulness interventions benefit caregivers. Mindfulness practices can enable the caregiver to become more accepting of emotions while decreasing cognitive avoidance, which can help to reduce the caregiver's stress (Baer, 2003). Mindfulness practices may also be used to increase caregivers' emotional awareness of being a caregiver (e.g., developing self-compassion and nonjudgmental awareness).

The literature also suggests that better caregiver mental health will positively impact family functioning and the parent-child relationship. Having high levels of parental stress is linked to a tendency to be irritable, emotionally withdrawn, and parent inconsistently, which can have negative impacts on children's emotional and behavioral development. It enhances emotional responsiveness, patience, and family communication through mindfulness-based interventions by enabling parents to get their emotional reactions under control. Stress reduction for caregivers can thus indirectly help to improve developmental and emotional outcomes for children with disabilities.

Although there is increasing empirical evidence supporting the use of mindfulness interventions, there are a number of drawbacks in the literature. Most of the studies have been done in Western populations, and findings are not widely applicable to other cultures. However, in countries like Pakistan, due to mental health stigma, financial constraints, and limited access to mental health services, caregivers may not be able to get support. In addition, numerous studies use self-report instruments of stress, anxiety, and depression that can lead to response bias. However, mindfulness interventions have certain limitations for generalizability to long-term benefits in a variety of populations: small samples and limited long-term follow-up. This is especially true in Pakistan, where culturally relevant caregiver interventions are necessary. In a qualitative study, Bano et al. (2026) found that the social stigma, emotional burden, lack of support services, and financial difficulties experienced by parents of children with ASD were all detrimental to their psychological well-being. These findings highlight the need for the creation and testing of local accessible interventions, like Mindfulness-Based Stress Reduction (MBSR). In addition, the psychological and systemic issues of professionals working with children with special needs have been brought to light in Pakistan, where they are at risk of occupational stress and lack of institutional support, and are forced to employ coping mechanisms to deal with the emotional demands of working with a child with special needs (Ashfaq et al., 2026). The implications of these results indicate that interventions for supporting emotional well-being are needed more widely in special-needs care environments and that this research confirms the potential for interventions to improve emotional well-being in this context.

Additional research is needed to explore online and community-based mindfulness interventions to alleviate barriers of cost, travel, and accessibility. Mindfulness studies have been needed in other cultures to assess the effects of culture on the caregiver's experience and treatment results.

The literature overall indicates that MBSR is a valid intervention to reduce psychological morbidity in parents of children with developmental disabilities. Mindfulness interventions seem to reduce stress, anxiety, depression, emotional exhaustion, and caregiver burden and improve emotional regulation, resilience, and adaptive coping. Mindfulness-based interventions may be a feasible and proven strategy to enhance the caregiver's mental health and healthy family functioning in response to the rising psychological needs of caregivers.

Material and Methods

In this study, the authors used a one-group pretest-posttest non-randomized design to test the intervention. This design involves administering a treatment to a single group of participants who are measured before and after treatment. This design did not involve the assignment of participants to experimental and control groups. Rather, the dependent variables were assessed before and after the treatment in the same group.

Sample

A purposive sampling approach was used. There were 35 parents for an 8-week Mindfulness-Based Stress Reduction (MBSR) intervention and a post-intervention assessment. Participants were selected for this study based on the following inclusion criteria: participants with a score of mild or higher on the Depression Anxiety Stress scale (DASS-21), which was used to assess stress, anxiety, and depression, were chosen to evaluate the effect of the intervention. They were excluded if they were under psychotherapy or other psychological treatment, or if they had any medical illnesses.

Instruments

The instruments used in the present research were as follows.

Demographic Sheet

This involved questions about age, gender, level of education achieved, occupation of parents, socio-economic status in society, marital status, total number of children, the child's diagnosis (Intellectual Disability or Down syndrome), severity of the child's condition, the duration of the diagnosis, and the prior knowledge of mindfulness or meditation.

Depression Anxiety Stress Scales- 21 items (DASS-21)

The Depression Anxiety Stress Scales-21 (DASS-21) (S. H. Lovibond and P. F. Lovibond, 1995) was used to assess depression, anxiety, and stress in this study. The DASS-21 is reliable (all subscales' Cronbach's alpha > 0.85), construct valid, and has good discriminant and convergent validities in clinical and non-clinical dimensions. This was used to study depression, anxiety, and stress pre and post Mindfulness-Based Stress Reduction (MBSR) program in the present study. The respondents rated this on a 4-point Likert scale, and the scores of three subscales were summed and doubled to make them comparable to the DASS-42.

Data Analysis

IBM SPSS Statistics was used to examine the percentage of parents who have children with intellectual and developmental disabilities (IDD) and Down syndrome. The effects of the Mindfulness-Based Stress Reduction (MBSR) intervention on depression, anxiety, and stress were also explored. Paired sample t-tests were utilized for comparing

posttest scores with pretest scores for each subscale to determine changes following the intervention. A p-value of less than p <.05 was significant, and Cohen's d was calculated to assess the impact of changes in psychological distress among participants.

Procedure

Ethical clearance was granted by the Institutional Review Board (IRB) of the National University of Medical Sciences (NUMS), informed consent was requested from all the subjects before data collection, and measures were taken to protect the confidentiality of the participants. 47 parents of children with developmental disabilities were identified and screened for eligibility. After screening, 35 participants who met the inclusion criteria participated in this study. Depression, anxiety, and stress scores were determined as baseline via DASS-21. The participants then followed an eight-week Mindfulness-Based Stress Reduction (MBSR) course, which included weekly sessions of about 70-90 minutes. Sessions included psycho education, mindfulness exercises, meditation practices, and group discussions, along with daily home-based mindfulness activities. Post-intervention assessment was conducted after completion of the program using the DASS-21.

Ethical Considerations

The Institutional Review Board (IRB) of the National University of Medical Sciences (NUMS) approved this study. Ethical procedures, as outlined in the American Psychological Association and institutional guidelines of research with human participants, were followed. The participants were provided with comprehensive information about the purpose, methodology, and value of the study, and informed consent forms were completed and signed before the study. Researchers ensured that this was done voluntarily and that participants knew that they could come and go as they pleased without any consequence. Participant coding and de-identification of participants in reports ensured anonymity and confidentiality. Data were stored in password-protected files and were only available to the researcher. Additionally, a debriefing session was held to inform the participants of the aims and findings of the study and tips for mindfulness and stress reduction. A “closing ceremony”, as well, took place as an ethical closure to the intervention.

Results and Discussion

The present study was carried out to evaluate the psychological morbidity of the parents of children with intellectual and developmental disabilities (IDD) and Down syndrome, and the validity of the Mindfulness-Based Stress Reduction (MBSR) intervention program. The SPSS-26 software was used for analysis. To give a comprehensive picture of the sample, frequencies and percentages were used to summarize the demographic features of the participants (N = 35). To confirm the validity and consistency of the measures employed, the psychometric characteristics of the scales, such as reliability coefficients, were next investigated. Lastly, the effects of the intervention were measured using inferential statistics and descriptive statistics like means and standard deviations. To gain a thorough knowledge of the intervention's impact on psychological morbidity, a paired sample t-test was specifically conducted on the pre-intervention and post-intervention findings of the depression, anxiety, and stress scores.

Table 1
Demographic characteristics of the sample (N=35)

Characteristics		f	%
Age			
	22-26	4	11.4
	27-31	14	40.0
	32-36	7	20.0
	37-41	8	82
	42-46	2	5.7

Gender			
	Male	1	2.9
	Female	34	97.1
Marital Status			
	Married	31	88.6
	Divorced	1	2.9
	Widow/Widower	3	8.6
No of children			
	1-2	24	68.6
	3-4	10	28.6
	5-6	1	2.9
Diagnosis of children			
	Intellectual Disability	21	60.0
	Down Syndrome	14	40.0
Severity of Disability			
	Mild	10	28.6
	Moderate	18	51.4
	Severe	7	20.0
Duration since Child's Diagnosis			
	1-2 years	7	20.0
	3-4 years	15	42.9
	5-6 years	11	31.4
	7-8 years	2	5.7

Note. f = frequency, % = percentage

Table 1 presents the frequency and percentage distribution of parents with children with intellectual and developmental disabilities (IDD) and adults with Down syndrome across the ages, gender, marital status, number of children, type of child's disability, severity of disability, and since the child was diagnosed. The majority of caregivers are aged 27–31 years (40%), 37–41 years (22.9%), 32–36 years (20%), 22–26 years (11.4%), and 42–46 years (5.7%), which shows that they were mostly in the active parenting age group. The majority of participants were female (97.1%), which depicts that mothers were the main caregivers. Most respondents were married (88.6%), whereas 8.6% were widowed and 2.9% divorced. Data on family size showed 68.6% were having one to two children, 28.6% were having three to four children, and 2.9% were having five to six children. Regarding child-related variables, 60% of the children had Intellectual Disability, while 40% had Down syndrome. The majority of children (51.4%) had moderate disability severity, with 28.6% having mild disabilities and 20% having severe disabilities. In terms of time followed by the diagnosis, the larger group depicted 3–4 years (42.9%), 5–6 years (31.4%), 1–2 years (20%), and lastly 7–8 years (5.7%).

Table 2
Psychometric Properties of the Pre-Test Variables/Scales (N=35)

Scale	k	α	M	SD	Range		Skew.	Kurt.
					Actual	Potential		
DASS-21	21	.99	45.0	11.1	21--58	0-63	-.47	-.26
Depression	7	.96	29.4	7.23	14-38	0-21	-.43	-.26
Stress	7	.95	30.0	7.56	14-40	0-21	-.43	-.57
Anxiety	7	.96	30.5	7.60	14-40	0-21	-.43	-.05

Note. N = number of participants; Items = number of scale items; Cronbach's α = Cronbach's alpha indicating internal consistency

Table 3
Psychometric Properties of the Post-Test Variables/Scales (N=35)

Scale	k	α	M	SD	Range		Skew.	Kurt.
					Actual	Potential		
DASS-21	21	.99	45.3	10.4	21-54	0-63	.09	-.82
Depression	7	.93	27.1	6.81	14-36	0-21	.01	-.68
Stress	7	.88	25.8	6.40	14-34	0-21	-1.03	.77
Anxiety	7	.95	27.7	7.82	14-38	0-21	-.01	-.89

Note. N = number of participants; Items = number of scale items; Cronbach's α = Cronbach's alpha indicating internal consistency of participants; Items = number of scale items; Cronbach's α = Cronbach's alpha indicating internal consistency

The psychometric characteristics of pre-test and post-test of the study samples (N = 35) are presented in Tables 2 and 3, respectively. The internal consistency of the overall scale was excellent at the pre-test (Cronbach's alpha =.99) and post-test (Cronbach's alpha =.99). Similarly, all three subscales showed high reliability coefficients at both stages, indicating consistent measurement of depression, anxiety, and stress among caregivers before and after the Mindfulness-Based Stress Reduction (MBSR) intervention. The overall mean score of DASS-21 was in the pre-test 45.0 (SD = 11.1) and in the post-test 45.3 (SD = 10.4), suggesting a relatively stable level of psychological distress. Reductions in subscores were observed after the intervention; however, in subscale means for Depression (M=29.4 to M=27.1), Stress (M=30.0 to M=25.8), and Anxiety (M=30.5 to M=27.7), indicating an improvement in the psychological morbidity of the participants after MBSR. In addition, the value of the observed scores was sufficient for both phases, and the skewness and kurtosis values for all variables used were within acceptable limits, suggesting that there existed a normal distribution of data.

Table 4
Paired sample T-test for DASS-21 Subscales (Pre and Post Intervention)

	Mean	**Std Dev**	**S.E Mean**	**Paired t-test**		
				t value	Df	Sig(two-tailed)
DASS-21						
Depression pre-test	29.43	7.24	1.22	6.36	34	<.001
Depression post-test	27.14	6.81	1.15			
Anxiety pre-test	30.57	7.60	1.28	6.13	34	<.001
Anxiety post-test	27.71	7.82	1.32			
Stress pre-test	30.00	7.68	1.29	5.68	34	<.001
Stress post-test	25.83	6.4	1.08			

Note. Std Dev = Standard Deviation; S.E. Mean = Standard Error of the Mean; df = degrees of freedom; Sig (two-tailed) = p-value.

A paired sample t-test was conducted, as described in Table 4, to examine the effect of the Mindfulness-Based Stress Reduction (MBSR) intervention on depression, anxiety, and stress measures for parents of children with IDD and Down syndrome. All three dimensions of psychological morbidity were shown to decrease significantly from pre-test to post-test. scores of depression decreased from 29.43 (SD = 7.24) at pre-test to 27.14 (SD = 6.81) and at post-test, $t(34) = 6.36$, $p < .001$. likewise anxiety scores decreased from 30.57 (SD = 7.60) to 27.71 (SD = 7.82), $t(34) = 6.13$, $p < .001$, and scores of stress decline from 30.00 (SD = 7.68) to 25.83 (SD = 6.40), $t(34) = 5.68$, $p < .001$. Overall, it suggested that the MBSR intervention was effective in significantly decreasing depression, anxiety, and stress levels among parents, making it useful for enhancing the psychological health of parents who are living in chronic stress.

Discussion

In the present study, the effectiveness of Mindfulness-Based Stress Reduction (MBSR) for the reduction of psychological distress was examined with parents of children with any developmental disability. The outcome demonstrated the effects of the reduction of depression, anxiety, and stress in the MBSR intervention group. The results suggest that the mindfulness-based interventions may have a positive impact on the emotional functioning and psychological well-being of caregivers with chronic stress. The findings are in line with the study hypothesis and suggest that MBSR can be a beneficial psychological treatment for emotional distress in parents of children with developmental disabilities. This decrease in psychological distress can be interpreted in the context of the theoretical perspective of mindfulness and emotional regulation. MBIs emphasize being mindful of the

moment, non-judgmental in regard to thoughts and feelings, and adopting a response rather than a reaction to difficult thoughts and feelings (Kabat-Zinn, 1990). Having a developmentally disabled child can cause parents to feel emotional stress, uncertainty, and chronic stress from the long-term care needs of their child. The technique of mindful meditation, breathing, and body awareness) made participants fully aware of their own emotions; helped them to cope with skills, which could have lowered their depression, anxiety, and stress levels. Moreover, mindfulness might be able to alleviate negative thoughts and emotions, such as rumination, worry, and emotional avoidance, which have been correlated with psychological distress. The findings from the current study confirm those of other studies that have found that MBSR is effective with a group of clinical caregivers, as well as with non-clinical caregivers. Stress, anxiety, and depression are reduced, and emotional regulation and emotional resilience enhanced following mindfulness-based interventions (Baer, 2003; Grossman et al., 2004). In the same way, mindfulness interventions have been found to decrease caregiver burden and increase overall caregiver psychological well-being in studies with parents of children with developmental disabilities (Bazzano et al., 2015). The present results also corroborate the accumulating evidence that MBI might be especially effective for those who are experiencing chronic caregiving stress and emotional exhaustion. In the present study, some factors might account for the success of MBSR. First of all, these mindfulness practices could have contributed to greater mindfulness in the participants about observing difficult emotions and stressors of caregiving with greater and less emotional reactivity. Second, mindfulness training may have enabled participants to become more mindful of their attention and emotions so that they could better cope with the demands they faced in their daily care. Moreover, the group-based structure of the intervention may have provided emotional support, social connections, and shared viewpoints for the participants that could also account for psychological effects of the intervention. Mindfulness practice in the morning, before the sessions, may also have facilitated participants' implementation of mindfulness skills in their daily life, which could help them to cope emotionally. The outcomes of this research can be useful for the workers in mental health, rehabilitation and mental health services organizations in supporting caregivers. The distress of caregivers of children with any developmental disability is greater, and integration of mindfulness-based interventions (MBIs) in caregiver support programs may improve emotional distress and coping mechanisms. MBSR may provide a set of non-pharmacological methods to manage stress, emotional burnout and psychological strain which may be accessible to the caregiver. The ability of culturally adaptable MBIs to be cost-effective, feasible and easily accessible solutions for improving the mental health of caregivers in developing countries such as Pakistan, where resources are limited, makes them a potentially promising approach. The results also underscore the importance of considering interventions for children with developmental disabilities within services, as well as the role of considering caregivers' well-being. The present study has some limitations which need to be noted while interpreting the results of the study. The one–group pretest–posttest quasi–experimental design is limited in terms of inferences that can be made about strong causal relationships, due to the absence of a control group. This smaller sample size also limits the extent to which the results can be generalized to other caregivers. Second, the use of self-report measures may have resulted in some distortion of answers, for example in relation to social desirability and subjectivity in reporting answers. A follow-up evaluation was not conducted to assess the long-term effects of treatment due to the short term assessment post intervention. Randomized controlled design with larger and more representative samples will enable future studies to examine the effectiveness of MBSR for caregivers of children with developmental disabilities, in greater depth.

In general, the current study offers preliminary empirical evidence that Mindfulness-Based Stress Reduction (MBSR) is effective in reducing psychological distress among parents of children who have any developmental disability. Findings indicate the

possibility of MBIs for emotional functioning, coping, and caregiver well-being with psychologically vulnerable populations.

Conclusion

The present study examined Mindfulness-Based Stress Reduction (MBSR) as a stress reduction therapy for parents of children with developmental disabilities. The findings showed that overall, there was a significant reduction in depression, anxiety, and stress scores in caregivers after participating in the MBSR intervention program, indicating significant improvement in emotional functioning and coping. The findings of this study suggest that mindfulness-based intervention can be beneficial for caregivers in coping with chronic stress resulting from caregiving by enhancing caregivers' emotional awareness, acceptance, and psychological regulation. Overall, this study provides preliminary empirical evidence for the benefits of MBSR as a valuable intervention for improving parent psychological well-being, and highlights the importance of caregiver mental health interventions in the rehabilitation and support programs of children with developmental disabilities.

Recommendations

Given the results, it is recommended that Mindfulness-Based Stress Reduction (MBSR) programs be integrated into the psychological support services available to parents of children with intellectual and developmental disabilities and Down syndrome as a means to significantly reduce depression, anxiety, and stress levels in parents. There is a need to create structured mental health and rehabilitation programs, including schools and special institutions for the education and development of adaptive coping strategies for caregivers, emotional regulation, and resilience in long-term care, through mindfulness-based interventions. Caregivers were mostly mothers, so there should be a greater focus on interventions for maternal mental health. Besides, awareness-raising is recommended to address stigma on mental health and disability, especially in a collectivistic society where caregivers may not be as motivated to seek psychological services. Future research should use larger and more diverse samples, follow-up assessments over longer periods of time, and culturally adapted mindfulness practices to further explore the sustainability of the MBSR in various populations and contexts. Mindfulness is also more easily accessible to some of those who are economically, geographically, or time sensitive for mental health services through community and/or online mindfulness programs.

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