

# The effectiveness of mindfulness-based stress reduction on parental stress during COVID-19 pandemic: A randomized controlled trial

La eficacia de la reducción del estrés basada en la atención plena sobre el estrés de los padres durante la pandemia de COVID-19:  
Un ensayo aleatorio controlado

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## SUMMARY

**Introduction:** Parental stress during the COVID-19 pandemic causes a negative parenting response and impacts children's social-emotional development. This study aimed to analyze the effectiveness of Mindfulness-Based Stress Reduction (MBSR) on parental stress during the COVID-19 pandemic.

**Methods:** This study used a randomized controlled trial. A total of 32 participants were recruited and randomly divided into intervention and control groups. The intervention group received mindfulness-based

stress reduction (MBSR) 8 sessions (one session a day for 40 minutes), while the control group got the same intervention after filling out the post-test. The parental stress index is used to measure the stress level of parents. Data were analyzed using Wilcoxon and Mann-Whitney tests.

**Results:** Participants in the intervention group showed a significant reduction in parental stress levels after receiving MBSR ( $p < 0.05$ ), as well as substantial differences in parental stress levels between the two groups ( $p < 0.05$ ).

**Conclusion:** Mindfulness-Based Stress Reduction (MBSR) reduced parental stress during the COVID-19 pandemic. Findings from the study suggest that MBSR can be carried out routinely on the sidelines of daily activities to reduce parental stress. Furthermore, it can be applied as nurses' independent intervention for reducing adult stress during the pandemic.

**Keywords:** COVID-19 pandemic, mindfulness-based stress reduction, parental stress, parents.

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## RESUMEN

**Introducción:** El estrés de los padres durante la pandemia de COVID-19 provoca una respuesta parental negativa e impacta el desarrollo socioemocional de los niños. Este estudio tuvo como objetivo analizar la efectividad de la reducción del estrés basada en la atención plena (MBSR) sobre el estrés de los padres durante la pandemia de COVID-19.

**Métodos:** *Este estudio utilizó un ensayo controlado aleatorio. Se reclutó un total de 32 participantes y se dividieron aleatoriamente en grupos de intervención y control. El grupo de intervención recibió 8 sesiones de reducción de estrés basada en atención plena (MBSR) (una sesión al día durante 40 minutos), mientras que el grupo de control recibió la misma intervención después de completar la prueba posterior. El índice de estrés parental se utiliza para medir el nivel de estrés de los padres. Los datos se analizaron utilizando las pruebas de Wilcoxon y Mann-Whitney.*

**Resultados:** *Los participantes del grupo de intervención mostraron una reducción significativa en los niveles de estrés de los padres después de recibir MBSR ( $p < 0,05$ ), así como diferencias sustanciales en los niveles de estrés de los padres entre los dos grupos ( $p < 0,05$ ).*

**Conclusión:** *La reducción del estrés basada en la atención plena (MBSR) redujo el estrés de los padres durante la pandemia de COVID-19. Los hallazgos del estudio sugieren que MBSR se puede llevar a cabo de forma rutinaria al margen de las actividades diarias para reducir el estrés de los padres. Además, se puede aplicar como intervención independiente de las enfermeras para reducir el estrés de los adultos durante la pandemia.*

**Palabras clave:** *Pandemia de COVID-19, reducción del estrés basada en la atención plena, estrés de los padres, padres.*

## INTRODUCTION

Corona Virus Disease 2019 (COVID-19), caused by SARS-CoV-2, was declared a pandemic for the first time on March 11, 2020. The COVID-19 pandemic has resulted in high mortality and severe morbidity (1) emerging integrative or hybrid methods (I/HM). Unfortunately, COVID-19 has remained a problem since discovering a new version of concern, known as Omicron (B.1.1.529). At the beginning of November 2021, Omicron was found in Botswana. This case was reported by the World Health Organization (WHO) on November 24, 2021, and is being treated as a global public health emergency (2,3). The omicron variety is expected to be three times more contagious than the initial SARS-CoV-2 strain and perhaps even more so than the delta strain (4). Indonesia had documented 644 instances of the Omicron variety as of January 14, 2022, most of which came from tourists abroad

(529 cases). The remaining instances (115) are local transmissions in Indonesia (5). Besides impacting health and the economy, this condition also affects education in Indonesia. Distance learning is an alternative solution implemented during the pandemic, but many problems arise during the implementation of distance learning, such as human resources and technology that are considered unsupportive (6-9).

The government applies a period of enforcement of community activity restrictions levels 1-3 so that limited face-to-face learning can be carried out (6,10-12). On the other hand, the limited face-to-face learning policy is not much different from online learning, where parents still must accompany their children to study at home. This condition can also trigger parental stress (13-15) Most parents, especially mothers who work outside the home, find it challenging to help their children study at home. In addition, some parents cannot support their children in learning at home due to the lack of parental education and limited information technology tools (16).

The significant changes to daily family life caused by the pandemic can trigger parental stress and intrafamilial tension, leading to an increase in adverse childhood experiences (ACEs), including domestic violence, child abuse, and neglect (17-19). On the other hand, stressful life events and the negative emotions they generate can dysregulate the immune response by disturbing the sensitive interplay among the central nervous system (CNS), endocrine system, and immune system (20-22). In addition, parents with higher parental stress have worse psychological well-being, more negative and less positive effects (23), and lower marriage qualified field (24). Furthermore, children in families with higher parenting stress have more internalizing and externalizing problems, poorer cognitive skills such as executive function, and more social and interpersonal difficulties (24,25).

One way to manage parental stress is using mindfulness-based therapy, which consists of Mindfulness-Based Stress Reduction (MBSR) (26), and Mindfulness-Based Cognitive Therapy (MBCT) (27). Mindfulness therapy focuses on what is being experienced and tries to enjoy the process that is being experienced instead of shifting the mind to something else (28,29).

Several studies have investigated the effects of MBSR and mindful parenting therapies on parenting stress during the last decade. The decrease in parental stress after participating in the MBSR program was reported by parents of preschool-aged children with Autism Spectrum Disorder (ASD) and other developmental delays (30). In addition, the MBSR program has been shown to reduce parental stress, promote psychological well-being, and have good benefits on the child's primary outcome among ADHD children (31). However, many studies have examined the effectiveness of MBSR, and very few studies on blended MBSR training on parents of the primary school age group at the time of this study. This study aimed to analyze the effectiveness of Mindfulness-Based Stress Reduction (MBSR) on parental stress during the COVID-19 pandemic.

## METHODS

A randomized controlled trial was conducted to assess Mindfulness-Based Stress Reduction (MBSR) to reduce parental stress during the COVID-19 pandemic from February until March 2022. The statistical population in this study were all parents of first-grade students at Anugrah Islamic Elementary School Surabaya in the academic year 2021-2022 who met the inclusion criteria. The inclusion criteria were a mother aged 26-45 years, internet access, participation in eight MBSR sessions, and completing the questionnaire. The exclusion criteria were history or current diagnosis of psychosomatic disease. Forty-three parents were selected as the study sample using simple random sampling and were randomly classified into two experimental groups and a control group ( $n = 16$  per group). Furthermore, research assistants carried out randomization, and participants were assigned to groups with numbered papers.

The instrument in this study was a modified Parental Stress Index-Short Form (PSI-SF) (32), which was created by Abidin (33). This instrument was modified because there are differences in the meaning of the items from the perspective of various cultures (32). The Parental Stress Index assesses three aspects, including the parent domain, the child domain, and the parent-child

interaction domain. These domains are combined to become a comprehensive, multidimensional measuring tool that can describe parenting stress. The construct includes the following elements: 1) Parent (depression, role restriction, sense of competence, social isolation, relationship with spouse, parental health), 2) Child (adaptability, demandingness, mood, irritability), and 3) Parent-child interaction (i.e., attachment, acceptability, reinforces parent). The parental stress scale is a five-category Likert scale with five options: Very Suitable (VS), Suitable (S), Uncertain (Ac), Unsuitable (U), and Very Unsuitable (VU). Because of the nature of the item, each statement had a scoring range of 1 to 5. (i.e., favourable or unfavourable). The high parental stress scale score revealed the severity of stress experienced by the parents and vice versa. The PSI validity and reliability test results showed that the valid item values ranged from 0.364 to 0.762 and were reliable (Cronbach's alpha 0.915). Parental stress criteria consist of mild ( $<72$ ), moderate (72-102), and severe ( $>102$ ) (32,34).

The intervention was carried out in eight sessions (twice a week), and each session was 40 minutes long. Offline sessions are held in the school room, while online sessions are held

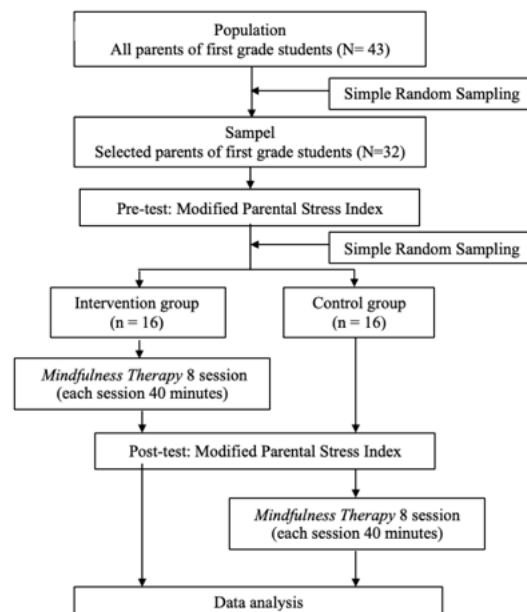


Figure 1. Recruitment and intervention flow.

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through the Zoom meeting platform. This online intervention is carried out because there are face-to-face restrictions. All online sessions are recorded and sent via group chat so they can be reviewed by all participants. Table 1 summarizes the details of the program.

**RESULTS**

A total of 32 mothers participated in and completed the pre-test and post-test (Table 2). Most of the mothers were aged 26-35 years

(71.9 %), high school senior education (68.8 %), and working (62.4 %). The results of the Chi-Square test showed that there was no significant difference in the characteristics of the participants between the two groups ( $p>0.05$ ).

The results of the Wilcoxon test (Table 3) showed a significant change before and after eight sessions of MBSR were given to the intervention group ( $p=0.001$ ). At the same time, there was no significant difference in the control group ( $p=1.00$ ). The Mann-Whitney test showed a significant difference between the two groups after being given MBSR ( $p=0.0001$ ).

Table 1  
Content of Mindfulness-Based Stress Reduction (MBSR)

Week	Content	Implementation
1	Intro to mindfulness, breath, and body scan	Offline
2	Mindfulness, sitting meditation	Offline
3	Guided imagery	Online
4	Letting go and forgiveness	Online
5	Confidence and self-acceptance	Online
6	Lovingkindness meditation	Offline
7	Beginner's mind (mystery and miracle of life)	Online
8	Self-transcendence	Online

Table 2  
Characteristics of Participants in This Study

Characteristics	Intervention Group		Control Group		Total n (%)	Test value	p-value
	n	%	n	%			
Age						-0.382	0.705
26-35 years	12	37.5	11	34.4	23 (71.9)		
36-45 years	4	12.5	5	15.6	9 (28.1)		
Education						0.616	0.542
Junior High School	2	6.2	3	9.4	5 (15.6)		
Senior High School	11	34.4	11	34.4	22 (68.8)		
College	3	9.4	2	6.2	5 (15.6)		
Occupation						-0.309	0.76
Working	10	31.2	10	31.2	20 (62.4)		
Not working	6	18.8	6	18.8	12 (37.6)		

Table 3  
Stress Level Difference Between Intervention and Control Group

Stress Level	Intervention Group		Control Group		p-value
	Pre n (%)	Post n (%)	Pre n (%)	Pre n (%)	
Low	0 (0)	0 (0)	3 (18.8)	3 (18.8)	0.0001**
Moderate	7 (43.8)	13 (81.3)	8 (50)	8 (50)	
High	9 (56.3)	3 (18.8)	5 (31.3)	5 (31.3)	
Total	16 (100)	16 (100)	16 (100)	16 (100)	
p-value	0.001*		1.000*		

\*Wilcoxon Test \*\*Mann-Whitney Test

## DISCUSSION

Most mothers who participated in this study were of working and productive age, having dual roles as mothers and workers. In addition, mothers must also assist their children in studying from home. Since the COVID-19 pandemic policy where family members stay at home, including children, there are several concerns for parents, especially mothers, such as the number of school assignments, understanding of learning materials, family health, and family finances (16). Mothers of productive age and working are prone to experiencing stress, especially during the COVID-19 pandemic; mothers must face various problems ranging from work and finances to teaching children to do school assignments and report them daily. Moreover, mothers are also required to understand learning materials at school.

This study aimed to investigate whether blended MBSR training had any effect on reducing parental stress during an 8-session program. The results showed a decrease in parental stress in the intervention group. MBSR is part of mindfulness-based interventions (MBI), and one study demonstrated online MBI to be effective in reducing psychological distress and the possible mediating role of emotion regulation (35). In addition to conducting face-to-face interventions, several MBSR sessions were conducted online, considering the high incidence of Omicron COVID-19. A systematic review showed online mindfulness also had a

positive effect. In times of uncertainty, turmoil, and distress, online mindfulness programs may help improve psychological health. These therapies temporarily improve state function (e.g., lowering pandemic-induced anxiety levels) (36). Online mindfulness programs for stress management have also been shown to reduce stress in Americans (37). Online mindfulness programs are also effective for pregnant women to teach them how to tolerate discomfort and cope with negative emotions by teaching them how to monitor their attention and accept what they are feeling. The findings suggest that an online mindfulness intervention could be a promising technique for teaching women how to use mindfulness skills to reduce depressive and anxious symptoms (38). There was no difference in effectiveness between the MBSR administered face-to-face or online, as both positively affected the participants. It may be because the material provided is following the standard operating procedure.

Even when the favorable effects are being investigated, MBIs are widely used as therapeutic techniques. Nyklcek and Kuijpers (39) used a randomized waitlist-controlled trial to implement the MBSR intervention among disturbed people. The study's goal was to see if mindfulness mediated the effects of MBSR on stress, vital exhaustion, positive and negative impact, quality of life, mindfulness, and daily mindfulness. MBSR usually starts with a body scan. Participants are instructed to pay attention to different areas of their bodies (from toe to head or otherwise) and feel the feelings that occur for

40-45 minutes without judging or modifying them. The following exercise is mindful yoga, designed to awaken attentive consciousness while watching the body gently. The effectiveness of MBSR against stress is also seen in the elderly with dementia. In addition, MBSR can reduce stress and improve mental health among caregivers of dementia patients who live in the community (40).

MBSR also includes sitting, walking, and lovingkindness meditation. While sitting, this practice involves paying attention to the flow of breath. Then, participants are guided to gradually shift their attention to other broader parts of the practice, including sounds, emotions, and ideas. Walking meditation is the next exercise, which is similar to the other meditation techniques. Participants must, however, feel the physiological feelings of walking in this situation. The final practice is lovingkindness meditation, in which participants pay attention with kindness and compassion to various things as well as all beings. This practice is seen as a key component of the MBSR program's adaptations for different objectives. Furthermore, rather than relying solely on formal mindfulness exercises during sessions, MBSR encourages clients to do informal mindfulness exercises every day (41,42). The three meditations in MBSR have their respective meanings and functions, so participants must focus and enjoy the meditation process. The participants will feel the positive effects if the meditation process is carried out correctly.

The participants were given the freedom and flexibility to tell their experiences after each meditation practice to express their feelings, thoughts, and body sensations. These findings follow the other study's results that the interaction between participants allows a process of helping each other, providing support, and showing a model of healthy behaviour so that anxiety in coronary heart disease patients decreases (43). Mindfulness intervention can also be combined with spiritual care, which has been proven to reduce public anxiety as an impact of the COVID-19 pandemic. Mindfulness meditation is the independent practice of healthcare professionals, individuals, and the general public for dealing with stress and anxiety during the COVID-19 crisis (44).

There are study limitations to note. First, the sample size is small, so it cannot be generalized to children with different developmental stages. Therefore, further research needs to be done to determine whether the results can be generalized to parents of children with various developmental periods (e.g., infants, preschoolers, adolescents). Second, this study did not measure effect size because the data scale used was ordinal, so we could not measure the strength of the MBSR effectiveness correctly. Future research is expected to measure the effect size of MBSR to know its effectiveness's power. The use of a larger sample is also likely in future research so that it can represent the population.

## CONCLUSION

The findings of this study indicate that the blended 8-session MBSR program (twice a week) with a duration of forty minutes is proven to reduce stress for parents with school-age children. Therefore, MBSR is expected to be one of the independent interventions of nurses in dealing with parental stress so that it can improve the welfare of parents so that it does not have an impact on the parenting process and mental health of their children.

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