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Development and Validation of a Mindfulness-Based Resilience Training Package and Its Effectiveness on Hope among Mothers of Children with Intellectual Disabilities

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ABSTRACT

Objective: This study aimed to develop and validate a mindfulness-based resilience training package and examine its effectiveness on hope among mothers of children with intellectual disabilities.

Methods and Materials: An exploratory sequential mixed-methods design was used. In the qualitative phase, previous studies were reviewed and semi-structured interviews were conducted with 11 mothers of children with mild intellectual disabilities until theoretical saturation was reached. Data were analyzed using thematic analysis. In the quantitative phase, 30 mothers were selected and randomly assigned to an experimental group ($n = 15$) and a control group ($n = 15$). The experimental group received a 12-session mindfulness-based resilience training package, while the control group received no intervention. Hope was assessed using the Miller Hope Scale. Data were analyzed using repeated-measures analysis of variance.

Findings: Qualitative analysis identified 8 main themes and 67 indicators related to mindfulness and resilience, including emotion regulation, coping skills, support resources, meaning-making, acceptance, mindful parenting, and awareness of experience. Content validity evaluation by experts confirmed the adequacy of the developed package, with acceptable CVR and CVI values and a Cohen's kappa coefficient above 0.75. Quantitative findings showed a significant time $\times$ group interaction for hope, $F = 5.50$, $p = .007$, $\eta^2 = .164$. The intervention group demonstrated higher hope scores compared with the control group at posttest (mean difference = 6.72, $p = .004$) and follow-up (mean difference = 6.67, $p = .013$). The effect remained stable after three months.

Conclusion: The mindfulness-based resilience training package is a valid and effective intervention for enhancing hope among mothers of children with intellectual disabilities.

Keywords: Mindfulness, Resilience, Hope, Intellectual Disability, Mothers.



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Introduction

Intellectual disability is a significant limitation in intellectual functioning that is substantially below average, with its effects simultaneously observed in adaptive skills, and it becomes evident before the age of 18 (Suchyadi et al., 2018). Children with this disorder confront the family, school, and society with various problems and difficulties and make them vulnerable to psychosocial disturbances, even during adolescence and adulthood (Galmarini-Kabala, 2019). In the definition provided by the American Association on Intellectual and Developmental Disabilities, intellectual disability is a fundamental concept that includes intellectual functioning, adaptive behavior or skills, and the developmental period (Lee et al., 2019). The concept of intellectual functioning aims to provide a comprehensive picture of cognitive abilities, such as problem-solving capacity, knowledge acquisition, adaptation to new situations, and abstract thinking. Adaptive behavior consists of a set of conceptual, social, and practical skills learned by individuals in order to function in daily life. Limitations in adaptive behavior affect both daily life and the ability to respond to life changes and environmental demands. The developmental period also includes the severity of the disorder over time (Özokcu et al., 2017). Having a child with intellectual disability is one of the most challenging parenting experiences and can have a significant negative effect on parents' mental health and quality of life, especially mothers. Mothers of these children usually face a continuous caregiving burden, which in many cases is accompanied by feelings of guilt, hopelessness, social shame, emotional burnout, and reduced life satisfaction (Takuri, 2014). These conditions can create high levels of psychological stress in mothers, which, if persistent, may lead to emotional harm, reduced daily functioning, and weakness in family relationships (Hameed, 2022).

One of the key psychological constructs that can play a protective role against chronic psychological pressure is resilience. Resilience refers to an individual's ability to return to emotional balance after facing difficult life events (Southwick et al., 2023). Mothers with higher levels of resilience show better functioning in the face of chronic stresses caused by caring for a child with intellectual disability and are less likely to experience psychological burnout (Widyawati et al., 2023). Studies

have shown that increasing resilience can also lead to improvements in components such as life expectancy and happiness (Salimi et al., 2017; Sharifian et al., 2024).

In recent years, mindfulness has been introduced as an effective approach for promoting resilience and mental health. Mindfulness means conscious and nonjudgmental attention to the experience of the present moment and can have a significant effect on psychological well-being through reducing negative cognitive processing, improving emotion regulation, and increasing acceptance (Kabat-Zinn, 2023). Studies have shown that mindfulness-based interventions can increase resilience and improve life expectancy in various groups, including parents of children with special needs.

On the other hand, life expectancy is one of the important indicators in explaining individuals' quality of life and mental health. Life expectancy refers to an individual's belief in the possibility of achieving goals and the meaningfulness of the future, which is directly related to increased resilience and psychological capacities (Murphy et al., 2026). Recent studies have emphasized that improving life expectancy in mothers of children with special needs affects not only their mental health but also the quality of care provided to the child (Bamber et al., 2023; Vasilopoulou & Nisbet, 2016).

Considering the specific psychological pressures faced by mothers of children with intellectual disability, designing targeted and localized interventions with a preventive and promotive approach is essential. Mindfulness-based educational interventions can play an important role in strengthening resilience and, through this pathway, increase life expectancy in this group (Bazzano et al., 2015). However, most existing intervention programs have been designed in a general manner and have not taken into account the specific characteristics and needs of these mothers. Therefore, it is necessary to design and validate an educational package emphasizing the specific psychosocial characteristics of mothers of children with intellectual disability, so that it can be used to improve key psychological indicators in this target group.

In the process of developing educational packages, one of the important principles is designing based on the specific characteristics of the target population. Accordingly, educational packages should be prepared with a deep understanding of the psychological,

emotional, and social issues of mothers of children with intellectual disability so that they can effectively meet the special needs of this group. In addition, validating these packages is particularly important to ensure their efficiency and effectiveness. In this regard, evaluations such as examining the degree of success in reducing stress and anxiety, increasing resilience, and improving mothers' quality of life can be included in the validation process (Feldman et al., 2009). Recent studies have also emphasized the role of mindfulness-based resilience in improving mental health in different social groups, which can be used as a basis for promoting the mental health of mothers of children with intellectual disability (Petcharat & Liehr, 2017).

Therefore, this study seeks to develop and validate a mindfulness-based resilience training package for mothers of children with intellectual disability. This educational package can be effective in reducing mothers' stress and anxiety, enhancing resilience, and improving their quality of life. Its validation is of particular importance, because it can assure designers and psychological counselors that these packages are scientifically and practically effective.

Methods and Materials

In terms of purpose, this study was fundamental-applied and used an exploratory sequential mixed-methods design. In order to identify the components required for developing the educational program, the qualitative phase of the study was conducted using research synthesis and thematic analysis. The quantitative phase was conducted using a quasi-experimental method with a pretest-posttest design and a control group.

In the qualitative phase, the statistical population consisted of all mothers of children with mild intellectual disability, with an IQ of 50 to 70, who were studying in exceptional schools in Tehran during the 2024–2025 academic year. In this phase, mothers of children with intellectual disability in Tehran in 2025 were selected as participants using purposive sampling. The sample size was determined based on data saturation and was estimated at 11 participants.

In the quantitative phase, the statistical population also consisted of all mothers of children with mild intellectual disability, with an IQ of 50 to 70, who were

studying in exceptional schools in Tehran during the 2024–2025 academic year. Using Cohen's table, with an effect size of 0.5, a type I error of 0.05, and a power of 0.90, the sample size was estimated at 15 participants in each group. To select the sample, exceptional schools in Tehran were visited, children with mild intellectual disability and an IQ of 50 to 70 were identified, and their mothers were invited to participate in the study. After selecting the sample using purposive sampling and based on the inclusion criteria, eligible mothers were identified and then randomly assigned to the experimental and control groups.

The data in the qualitative phase were collected through in-depth interviews, and the data in the quantitative phase were collected using the Miller Hope Scale developed by Miller & Powers (1988). The researcher-made mindfulness-based resilience training package was developed in 12 sessions. In the qualitative phase, the data were analyzed using research synthesis and the six-step thematic analysis method, and MAXQDA software was used in this phase. The quantitative data were analyzed using repeated-measures analysis of variance. Data analysis was performed using SPSS version 28.

Instruments

1) Miller Hope Scale (MHS)

This questionnaire was developed by Miller & Powers (1988). It is a diagnostic-type test that was first used to measure hopefulness among cardiac patients in the United States in order to assess their level of hope. The initial questionnaire had 40 items, which was increased to 48 items in later versions. The purpose of this questionnaire is to measure individuals' level of hopefulness. This test includes 11 aspects of hopefulness and helplessness, and its items are selected based on overt or covert behavioral manifestations in hopeful or hopeless individuals (Miller & Powers, 1988). For each aspect, which represents a behavioral sign, the response options include: 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, and 5 = strongly agree. Each person obtains a score from 1 to 5 by selecting the option that applies to them.

The scoring of the Miller Hope Scale (MHS) is as follows: in each item, strongly disagree receives a score of 1, disagree receives a score of 2, neutral receives a score of 3, agree receives a score of 4, and strongly agree receives a score of 5. Items 11, 13, 16, 18, 25, 27, 28, 31,

33, 34, 38, 39, 47, and 48 are reverse scored. The sum of the obtained scores indicates the individual's hopefulness. The score range varies from 48 to 240. If an individual obtains a score of 48, they are considered completely helpless, while a score of 240 indicates the maximum level of hopefulness. The reliability of the Miller Hope Scale was obtained using Cronbach's alpha as 0.91, and the validity coefficient calculated through confirmatory factor analysis was 0.62 (Miller & Powers,

1988). This test was first administered in Iran by Samiei (1989) to 30 male nursing students, and its reliability was determined using the test-retest method with a one-week interval. The Pearson correlation coefficient between the two sets of test scores was estimated at $R = 0.75$, and the mean was 151.3. In Samiei's (1989) study, validity was obtained as 0.82 using confirmatory factor analysis. In the present study, the reliability of this questionnaire obtained 0.92 using Cronbach's alpha.

2) Researcher-Made Mindfulness-Based Resilience Training Package

Table 1

Researcher-made 12-session mindfulness-based resilience training package for mothers of children with intellectual disability

Session	Objective	Content
1	Establishing a therapeutic alliance, creating a safe and empathetic atmosphere, introducing mothers to the concept of resilience and its necessity in facing the challenges of mothering a child with intellectual disability.	Introduction of group members, completion of pretest questionnaires, and explanation of the sessions. In this session, participants become familiar with the goals of the intervention and the structure of the sessions and have the opportunity to share their lived experiences with the group. The definition of resilience and its role in coping with chronic pressures and challenging situations are explained. Mindfulness is introduced as a key skill for increasing self-awareness and emotion management. Emphasis is placed on the specific pressures faced by mothers of children with intellectual disability, including medical treatments, financial problems, concerns about the child's future, social judgment, and psychological burnout. Group discussion is held about the importance of social support and internal resources.
2	Increasing attention to present-moment experience and reducing rumination and immersion in the past or worry about the future.	The concept of living in the present moment and mindful attention is explained. The role of the wandering mind and its effect on maternal stress and anxiety are discussed. Emphasis is placed on observing thoughts and feelings without judgment and practicing mindful presence in daily activities. Practical exercises include the five-senses exercise, focusing on a simple activity, such as eating a raisin, and observing thoughts as passing phenomena.
3	Creating distance between stimulus and response and reducing rapid and impulsive emotional reactions.	The stimulus-emotion-behavior cycle is explained, and the role of mindful pause in breaking automatic reactions is taught. The STOP exercise, including stop, breathe, observe, and continue mindfully, is introduced, and practical examples are provided for dealing with challenging child behaviors. Participants learn to observe the child's behavior without judgment and to identify and control their own impulsive reactions.
4	Increasing the ability to accept difficult emotions without suppression or denial and reducing guilt and stress.	The concept of acceptance and its difference from surrender are explained. Maternal emotions such as anger, sadness, helplessness, and anxiety, as well as their normality, are examined. The role of acceptance in reducing psychological pressure and increasing the ability to cope with challenging conditions is discussed. Exercises include naming emotions, allowing feelings without judgment, and recording emotional experiences.
5	Reducing self-criticism, increasing kindness and internal support, and improving maternal self-confidence.	The three components of self-compassion, including self-kindness, common humanity, and mindfulness, are explained. The relationship between self-criticism and maternal psychological burnout is described. Practical exercises include writing a compassionate letter to oneself, replacing critical self-talk with supportive self-talk, and designing a personal self-care plan.
6	Increasing body awareness and reducing physiological and mental tension.	The relationship between body and emotion is examined. Bodily signs of stress, including muscle tension, heart palpitations, and mental tension, are introduced. Practical exercises include body scan, diaphragmatic breathing, progressive muscle relaxation, and brief meditation. Mothers learn to pay attention to bodily changes and reduce tension using mindfulness exercises.
7	Managing anger, fear, and anxiety in challenging situations and increasing response control and mindful decision-making.	The cycle of emotion formation and emotion-regulation strategies is taught. The difference between emotion suppression and healthy emotion regulation is explained. Exercises include analyzing the stimulus-thought-emotion-behavior cycle, cognitive reappraisal, and deep breathing practice in critical situations.
8	Identifying emotional, physical, spiritual, and social needs, preventing burnout, and enhancing self-care.	The concept of self-awareness and identification of personal needs is explained. The role of ignoring needs in increasing stress and reducing resilience is examined. Exercises include drawing a personal needs map, identifying stressors, and prioritizing needs.
9	Reducing rigid beliefs and increasing flexibility in thinking, problem-solving ability, and multidimensional views of problems.	Dysfunctional beliefs about children with intellectual disability and their consequences are examined. Cognitive reappraisal techniques and attitude change regarding the child's limitations and strengths are taught. Exercises include viewing problems from multiple perspectives and recording the child's strengths.

10	Enhancing meaning in the experience of motherhood and increasing hope and motivation to continue the path.	The role of meaning-making in resilience is examined. Practical exercises include writing a personal growth story, practicing gratitude, and focusing on the child's small improvements. Mothers are encouraged to rediscover their personal values and meanings in the path of motherhood.
11	Strengthening internal and external support networks and increasing self-efficacy and ability to cope with pressure.	Support resources, including family, friends, support groups, therapeutic services, and internal resources such as faith, patience, and self-esteem, are examined. Exercises include drawing a support network map, asking for help, and strengthening self-efficacy statements.
12	Consolidating learned skills, designing a personal self-care plan, and preventing recurrence of tension and stress.	All skills and exercises from previous sessions are reviewed. Mothers design their personal resilience toolkit, and a three-month self-care plan is developed. Discussion is held on how to use the skills integratively in real situations, and relapse-prevention strategies are introduced. The posttest is administered, and mothers are thanked and appreciated for their participation.

Findings and Results

In the research synthesis section, based on previous studies, 67 indicators and 8 themes were extracted, including emotion regulation, coping skills, support networks, cohesion and coordination, meaning-making, awareness and understanding of experience, acceptance, and mindful parenting. Three themes, namely awareness and understanding of experience, acceptance, and

mindful parenting, were related to the category of mindfulness, and five themes, namely emotion regulation, coping skills, support networks, cohesion and coordination, and meaning-making, were related to resilience. In the final stage of the research synthesis process, the findings obtained from content analysis were presented in an overall view and in the form of the conceptual model shown in Figure 1.



Figure 1

Conceptual Model of the Components of Resilience and Mindfulness

The demographic findings in the thematic analysis section showed that the age of the interviewed mothers ranged from 33 to 46 years, and their mean age was approximately 39 to 40 years. In terms of occupational status, 4 participants were homemakers, 2 were teachers, 2 were nurses, 2 were self-employed, and 1 was a bank employee. In terms of educational level, the highest frequency belonged to bachelor's degree holders, with 5 participants, followed by high school diploma holders, with 4 participants. In addition, 2 participants

had a master's degree. The number of children of the participants ranged from 1 to 3. The highest frequency belonged to mothers with 2 children, with 6 participants, followed by mothers with 1 child, with 3 participants, and mothers with 3 children, with 2 participants. Regarding the family's economic status, three levels were reported: good, moderate, and poor. Four families had good economic status, four families had moderate economic status, and three families had poor economic status.

Table 2

Extraction of Initial Codes, Subthemes, and Main Themes from Interviews with Participants

Interviewee Numbers	Initial Codes	Subthemes	Main Themes
1, 3, 9, 4, 7	Focusing on the present moment / attention to details / becoming aware of thoughts when a problem occurs / being attentive to the environment and stimuli / preventing immersion in the past / not worrying about the future Observing without immediate reaction / pausing before responding / looking at the child's behavior without judgment / not paying attention to negative thoughts / readiness for possible problems / delaying negative emotional reactions	Mindful attention to momentary experience Lack of momentary reaction	Living in the present moment
2, 3, 5, 7, 10, 11	Accepting the problem / accepting empathy / accepting one's own emotions / accepting anger / accepting sadness / accepting helplessness / suppressing emotions / accepting the normality of maternal emotions / not feeling guilty / not denying unpleasant emotions Accepting the child's developmental limitations / realistic understanding of the child's limitations / accepting physicians' diagnosis / abandoning initial denial / accepting the child's difference from peers / accepting the slow process of the child's learning / accepting the child's special needs / abandoning the ideal mental image of the child / realistic expectations / accepting that changes take time / understanding the child's ability Rest / recreation / entertainment / verbal self-support / attention to personal needs / encouraging oneself to continue / creating personal time / avoiding unrealistic expectations of oneself / rest and renewal of energy / flexibility in beliefs and desires / attention to personal growth Focusing on breathing / muscle relaxation / awareness of bodily state in the moment / focusing on heartbeat / paying attention to feelings and thoughts in the moment without judgment / calming tense or repetitive thoughts / letting go of worries and fears / experiencing stillness / reducing mental tension while caring for the child / distancing from negative thoughts / reducing self-criticism / body awareness / yoga / meditation Empathetic dialogue / trying to calm oneself / asking for help without feeling weak	Acceptance of unpleasant emotions Acceptance of the child's current condition Kindness to oneself Meditation Empathy Managing reactions	Acceptance Self-compassion Emotion regulation
1, 2, 3, 6, 8, 10, 11	Controlling anger during the child's challenging behavior / controlling the way emotions are expressed / healthy expression of emotions / controlling thoughts / controlling emotions / managing anger and fear / proper crisis management / ability to continue despite intense emotion / controlling impulsive reactions / recognizing feelings / identifying the main emotion Cognitive reappraisal / body relaxation / problem-solving ability / writing emotions / identifying repetitive patterns / deep breathing / constructive dialogue	Emotion-regulation strategies	
2, 4, 3, 5, 8, 9, 7	Awareness of breathing / feeling muscle tension / heartbeat / awareness of bodily reactions / awareness of bodily sensations / awareness of thoughts / awareness of one's behaviors / attention to physical health Identifying emotional needs / identifying physical needs / identifying spiritual needs / identifying social needs / need for rest / need for social support / need for help from others / awareness of the type of request / recognition of personal values / recognition of the maternal role / awareness of how to treat oneself Stress caused by medical treatments / financial problems / comparing one's child with others / social judgment / fatigue / burnout / normality of feeling pressure / awareness of multiple roles	Awareness of one's body Awareness of one's needs Recognizing stressors	Self-awareness
3, 4, 6, 7, 10, 1	Trying to see positive aspects / not having strict expectations / changing one's attitude toward the problem / optimism / seeing the world from the child's perspective / looking at an issue from different angles / trying to see the child's strengths alongside limitations / moving away from one-sided thinking / reconsidering false beliefs about intellectual disability / changing negative beliefs about the child's future Changing plans based on the child's needs / learning new methods of teaching and parenting / finding different solutions to problems / ability to change parenting style / not following previous ineffective patterns	Reappraisal of thoughts and beliefs Ability to adapt to new conditions	Cognitive flexibility

1, 4, 6, 7, 9, 10, 11	Understanding the meaning of motherhood / understanding the meaning of parenting / finding new meaningful values / giving meaning to challenges / understanding the meaning of the current experience / the child as a source of divine love Trust in the child's progress / hope for the future / observing positive changes in the child / focusing on the child's abilities / valuing small improvements / finding the child's unique values	Finding meaning in experience Hope and motivation to continue	Meaning-making and hope Support resources
1, 2, 5, 8, 7, 9, 10	Help from family / receiving emotional support from friends / using support groups for parents of children with special needs / counseling / occupational therapy / speech therapy / participating in parenting workshops / health services Self-esteem and self-efficacy / faith in God / gratitude / trust in God / inner strength / appreciation / positive thinking / hope / religious beliefs / prayer / endurance and patience / self-esteem / self-efficacy	External support resources Internal support resources	Support resources

As shown in Table 2, 8 main themes, 18 subthemes, and 103 initial codes were extracted.

In the validation process of the mindfulness-based resilience training package, considering the developmental nature of the intervention and the extraction of its components from the qualitative findings of the study, its content validity was examined systematically and based on standard quantitative indices. For this purpose, after the initial 12-session version was developed, including behavioral objectives, theoretical content, practical exercises, and homework assignments, the preliminary version was submitted to a panel of experts. The panel members included specialists in clinical psychology, health psychology, psychometrics, education of children with special needs, and professors in the field of mindfulness who had relevant research and clinical backgrounds. The number of experts was set at 10, which is sufficient according to methodological recommendations for calculating content validity indices.

In the first stage, Lawshe's content validity ratio was used to examine content validity. For this purpose, each component of the package, including the objectives of each session, educational techniques, experiential exercises, and homework assignments, was prepared in an evaluation form, and the experts were asked to classify each component into three levels: "essential," "useful but not essential," and "not essential." Then, the content validity ratio for each component was calculated based on Lawshe's formula. Given the number of 10 experts, the minimum acceptable value for the content validity ratio was considered to be 0.62. The results showed that all components of the package had values above the minimum criterion, and the mean content validity ratio at the total package level was within the desirable range, indicating the necessity of the designed components from the experts' perspective. In cases where the index value was close to the minimum

criterion, the experts' suggested revisions were applied and the components were re-evaluated to increase content coherence and necessity.

In the next step, the content validity index was calculated using the Waltz and Bausell method. At this stage, the experts were asked to evaluate each component in terms of three indices: relevance, clarity, and simplicity, on a four-point scale. The content validity index was calculated at both the item level and the total level. The acceptance criterion for items was considered to be 0.79 or higher. The results showed that all sessions and components of the package had indices above the criterion, and the mean content validity index for the entire package was at a very desirable level. This finding indicates the alignment of the educational components with the theoretical construct of mindfulness-based resilience and their appropriateness for the characteristics of the target population.

To examine the degree of agreement among raters, Cohen's kappa coefficient was calculated. For this purpose, the experts' judgments about the necessity of each component were coded dichotomously as essential or nonessential, and agreement beyond chance among raters was calculated. The kappa coefficient was obtained above 0.75, indicating high and significant agreement among the experts regarding the adequacy and necessity of the package components. This index indicates that the convergence of expert opinions was not merely due to chance, but resulted from the scientific coherence of the package content.

In addition to content validity, face validity was examined at both qualitative and quantitative levels. At the qualitative level, feedback from mothers of children with intellectual disability was obtained regarding the understandability, applicability, and cultural appropriateness of the exercises, and necessary revisions were made. At the quantitative level, participants were asked to evaluate each session on a

five-point scale in terms of clarity and relevance to their needs. The mean scores were higher than the average level, indicating the face acceptability of the package.

To strengthen construct validity, a matrix was prepared to match the sessions with the theoretical components extracted from the qualitative analysis, and the overlap of each session with the main themes, including living in the present moment, acceptance, self-compassion, emotion regulation, self-awareness, cognitive flexibility, meaning-making, and support resources, was examined. The alignment analysis showed that the distribution of components throughout the sessions had logical coherence and that the intervention pathway was designed gradually, from increasing awareness to strengthening meaning and hope.

Finally, the structural reliability of the package was evaluated through pilot implementation on a small sample and examination of the stability of session implementation and consistency of the delivered content. Moreover, to increase reproducibility, a structured implementation guide was developed,

including specific behavioral objectives, exercise instructions, precise timing, and standardized homework assignments, so that implementation of the intervention under similar conditions would produce consistent results.

The set of indices obtained from the content validity ratio, content validity index, and kappa coefficient showed that the developed educational package had desirable content validity, high inter-rater agreement, and sufficient theoretical coherence, and can be used as a scientific and valid intervention in the target population.

Description of Demographic Variables

In this section, demographic characteristics are described separately for the two groups. The experimental group included 15 participants, and the control group included 15 participants. Table 3 describes the age and educational level of the participants. Fisher's exact test was used to examine age homogeneity, and the chi-square test was used to examine educational homogeneity in the two groups.

Table 3

Descriptive Indices of Age and Educational Level by Group, along with Homogeneity Test

Variable	Categories	Mindfulness-Based Resilience		Control Group		p Value
		Frequency	Percentage	Frequency	Percentage	
Age	20–30 years	8	53.3	9	60	1
	31–40 years	7	46.7	6	40	
Educational level	High school diploma	5	33.3	4	26.7	
	Associate and bachelor's degrees	6	40	6	40	
	Master's and doctoral degrees	4	26.7	5	33.3	0.895

The results of Table 3 showed that there was no considerable difference between the two groups in terms of age and educational level. Considering that the significance levels of Fisher's exact test and the chi-square test were higher than 0.05, it can be concluded

that the two groups were homogeneous in terms of age and educational level ($p > 0.05$).

Table 4 describes the life expectancy variable using mean and standard deviation.

Table 4

Descriptive Statistics of Life Expectancy by Group and Time

Variable	Time	Mindfulness-Based Resilience		Control	
		Mean	Standard Deviation	Mean	Standard Deviation
Life expectancy	Pretest	149.67	22.06	146.40	28.48
	Posttest	157.47	23.05	147.87	27.83
	Follow-up	156.73	24.02	147.13	28.23

The results of Table 4 showed that the mean score of life expectancy in the mindfulness-based resilience

group was 149.67 in the pretest, increased to 157.47 in the posttest, showing an increase of 7.80 points, and was

156.73 at follow-up, showing an increase of 7.06 points compared with the pretest. In the control group, no considerable change was observed in the mean score of life expectancy. The pretest mean was 146.40, while the posttest and follow-up means were 147.87 and 147.13, respectively.

Normal distribution was examined using the Shapiro-Wilk test. Statistical tests used to assess normality include the Kolmogorov-Smirnov test and the Shapiro-Wilk test. The results of Levene's test showed that the significance level for all variables was greater than 0.05, and the assumption of homogeneity of variances was confirmed ($p > 0.05$). The results of Box's M test showed that, since the significance level for all main variables was greater than the criterion of 0.001, the assumption of homogeneity of variance-covariance matrices was

confirmed ($p > 0.001$). The significance level of Box's M test for life expectancy was 0.004, indicating confirmation of the assumption of homogeneity of variance-covariance matrices. The results of Mauchly's test showed that, considering the obtained significance levels for life expectancy, happiness, and stress, which were greater than the criterion of 0.001, the assumption of homogeneity of error covariances for these three variables was confirmed ($p > 0.001$). The significance level of Mauchly's test for life expectancy was 0.098, indicating confirmation of the assumption of homogeneity of error covariances.

Table 5 presents the between-subjects effects, group effect, within-subjects effects, time effect, and the interaction effect of time and group.

Table 5

Results of Repeated-Measures Test for Examining the Effectiveness of the Intervention on Life Expectancy

Variable	Source of Effect	Sum of Squares	df	Mean Square	F	p Value	Partial Eta Squared
Life expectancy	Group	337.88	1	337.88	9.74	0.004	0.265
	Time	372.16	2	186.08	10.21	<0.001	0.267
	Time × Group	200.56	2	100.28	5.50	0.007	0.164

The results of Table 5 regarding the life expectancy variable showed that the effect of time and the interaction effect of time and group were significant ($p < 0.05$). The findings showed that, since the interaction effect of time and group, as the most important source of effect, was significant, the effectiveness of the mindfulness-based resilience intervention on life expectancy was statistically confirmed. The effect size

was examined using partial eta squared, which was 0.164, indicating a considerable and strong effect. Next, pairwise comparisons were examined. Table 6 presents the results of the Bonferroni post hoc test, comparing the mean score of life expectancy at posttest and follow-up between the two groups, while controlling for the pretest score.

Table 6

Bonferroni Post Hoc Test for Comparing the Effectiveness of the Intervention on Life Expectancy at Posttest and Follow-up

Variable	Time	Group	Adjusted Posttest / Follow-up Mean	Standard Error	Mean Difference	p Value
Life expectancy	Posttest	Mindfulness-based resilience	156.03	1.52	6.72	0.004
		Control	149.31	1.52		
	Follow-up	Mindfulness-based resilience	155.27	1.78	6.67	0.013
		Control	148.60	1.78		

The results of the Bonferroni post hoc test, shown in Table 6, regarding the life expectancy variable showed that there was a significant difference between the posttest mean of the experimental group and the control group ($p < 0.05$). The posttest mean of the mindfulness-based resilience group was 6.72 points higher than that of the control group. Accordingly, the effectiveness of the

mindfulness-based resilience intervention on life expectancy was confirmed, such that the mindfulness-based resilience intervention increased life expectancy among participants. At follow-up, the mean score of the experimental group was 155.27, which was 6.67 points higher than that of the control group, indicating the persistence of the intervention effect ($p < 0.05$). Table 7

presents the results of the post hoc test for pairwise comparison of means within each group.

Table 7

Post Hoc Test for Pairwise Comparison of Life Expectancy across Time Series

Variable	Group	Reference Time	Comparison Time	Mean Difference	p Value
Life expectancy	Mindfulness-based resilience	Pretest	Posttest	-7.80	0.005
		Pretest	Follow-up	-7.07	0.013
		Posttest	Follow-up	0.73	0.299
	Control	Pretest	Posttest	-1.47	0.054
		Pretest	Follow-up	-0.73	0.505
		Posttest	Follow-up	0.73	0.448

The results of the post hoc test, shown in Table 7, regarding life expectancy showed that in the experimental group, there was a significant change in the posttest and follow-up means compared with the pretest, indicating that the mean score of the experimental group increased at posttest and follow-up compared with the pretest ($p < 0.05$). Examination of the persistence of the effect through comparison of the follow-up mean with the pretest mean showed that the follow-up mean was significantly higher than the pretest mean, indicating that the persistence of the effect of the mindfulness-based resilience intervention on life expectancy was confirmed ($p < 0.05$). In the control group, there was no significant difference among the means across time points ($p > 0.05$).

Discussion and Conclusion

The present study was conducted with the aim of developing and validating a mindfulness-based resilience training package and examining its effectiveness on life expectancy among mothers of children with intellectual disabilities. The findings showed that the mindfulness-based resilience intervention was effective on life expectancy, and the persistence of the effect of the mindfulness-based resilience intervention on life expectancy was also confirmed. These findings are consistent with the findings of Sharifian et al. (2024) and Shaygan et al. (2025).

In explaining these findings, it can be stated that the results of the present study, indicating that the mindfulness-based resilience intervention significantly increased life expectancy among mothers of children with intellectual disabilities and that the positive effects of this intervention remained until the follow-up stage, have strong scientific consistency within the theoretical

framework and empirical research findings in the field of mindfulness and psychological well-being, and are aligned with the patterns of valid research findings. Understanding this finding scientifically requires examining how mindfulness affects hope and the mediating mechanisms that have been addressed in several studies. Mindfulness is defined as a psychological skill that includes purposeful concentration, conscious attention, and nonjudgmental acceptance of present experience. Theoretical models of mindfulness propose that increasing mindful attention and acceptance of experience can improve fundamental psychological processes, including emotion regulation, reduction of rumination and negative thoughts, and increased capacity to engage with difficult experiences, all of which are considered powerful tools for enhancing life expectancy. Empirical data also show that mindfulness-based interventions can lead to increases in positive psychological indicators, including hope, even under severe clinical conditions. For example, a study among patients with schizophrenia showed that participation in a mindfulness-based stress reduction program significantly increased hope and psychological well-being scores compared with the control group (Özdemir & Kavak Budak, 2022).

The role of mindfulness in increasing life expectancy has also been studied in populations unrelated to psychiatric disorders. For instance, among students, a study showed that mindfulness increased resilience and then increased “enthusiasm for life” or the desire to live, which is one of the important indicators of hope, and these effects were still observable during follow-up (Dahlgaard et al., 2019). These findings are more consistent with the view that resilience can be a mediator between mindfulness and positive indicators of

well-being, including hope, such that increased attentional awareness directly strengthens individuals' ability to see positive perspectives and life goals; this is also consistent with theoretical models such as the broaden-and-build theory.

Another study in an educational context showed that mindfulness has a positive relationship with academic hope and indicated the mediating role of hope in strengthening resilience. This emphasizes that mindfulness may strengthen the nature of hope by increasing belief in the ability to achieve goals and in the pathways to reach them (Rui et al., 2025). This finding directly shows that mindfulness is recognized not only as a concentration skill, but also as a process that enables the formation of hopeful attitudes.

The psychological mechanisms through which mindfulness affects life expectancy have also been examined in different studies. One of these mechanisms is the reduction of rumination and acceptance of present experience, which increases the individual's capacity to see positive perspectives and have realistic expectations for the future. A scientific study showed that resilience can mediate the relationship between mindfulness and indicators of life satisfaction as well as positive and negative affect. This indicates that increasing resilience through mindfulness training can lead to improvement in positive dimensions of life expectancy (McCray et al., 2016). Moreover, mindfulness can strengthen constructs that support life expectancy by increasing body awareness and emotion regulation, because individuals learn to manage their emotional reactions more consciously and engage with present experience without negative reactions, which directly affects their ability to create hopeful perspectives. These mechanisms have been widely examined in meta-analyses and several reviews in the scientific literature, showing that mindfulness interventions are associated with positive effects on emotion regulation and components related to psychological well-being (Choudhary, 2023; Nyklíček, 2010).

Accordingly, the findings of the present study, which show increased life expectancy after the mindfulness-based resilience intervention and maintenance of this effect at follow-up, can be explained within a broad theoretical and empirical framework. Mindfulness, by improving cognitive and emotional processes related to positive attitudes, helps individuals increase their ability

to identify meaningful goals in life, plan to achieve them, and maintain a positive perspective when facing difficulties. These findings are not only consistent with international research findings, but also show that using a mindfulness-based resilience training package can scientifically confirm improvement in life expectancy and the stability of its effect in similar clinical and nonclinical populations. Finally, these theoretical and empirical patterns show that mindfulness, as a skill developed during the intervention, can increase life expectancy because the individual gains greater ability to regulate emotion, accept experience, focus on positive goals, and understand meaning in life, all of which are constructs that have broad scientific support in the psychological literature for their relationship with life expectancy and resilience.

Regarding the limitations of the study, it can be stated that the sample size was limited and selected only from mothers of children with mild intellectual disability, with an IQ of 50 to 70, in Tehran. This limits the generalizability of the findings to other regions, families of children with different levels of intellectual disability, and different population groups. The intervention program consisted of 12 group sessions, and the depth and continuity of its effect may therefore be limited. The absence of some participants or incomplete participation in sessions could have reduced the actual intensity of the program's effect. To increase the generalizability of the findings, it is suggested that future studies select larger and more diverse samples of mothers of children with intellectual disabilities with different IQ levels and from different geographical and cultural regions, so that the results can represent a broader population.

Finally, considering the limitation related to the depth and continuity of the intervention, it is suggested that mindfulness-based resilience programs be designed with longer sessions and supplementary exercises, and that their effectiveness be evaluated across different time periods in order to examine more stable effects. To increase life expectancy among mothers of children with intellectual disabilities, it is recommended that educational and psychological centers provide mindfulness-based resilience programs in the form of group and individual sessions. These programs can include exercises for accepting emotions, focusing on the child's abilities, and cognitive reappraisal, so that

mothers can develop a positive and realistic outlook toward their own future and that of their child.

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Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

The study protocol adhered to the principles outlined in the Declaration of Helsinki, which provides guidelines for ethical research involving human participants. Ethical considerations in this study were that participation was entirely optional.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

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Authors' Contributions

All authors equally contributed to this study.

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