Received: 4 January 2019 | Revised: 24 June 2019 | Accepted: 15 July 2019

DOI: 10.1111/ajpy.12265

ORIGINAL ARTICLE

WILEY

The effect of mindfulness-based stress reduction on body image concerns of adolescent girls with dysfunctional eating attitudes

Parya Khoshkerdar | **Zohreh Raeisi**

Department of Psychology, Najafabad Branch, Islamic Azad University, Najafabad, Iran

Correspondence
Parya Khoshkerdar, Department of Psychology, Najafabad Branch, Islamic Azad University, Najafabad, Iran.
Email: paria.khoshkerdar1983@gmail.com

Abstract

Objective: In order to face the gain weight stress during puberty, adolescents often adopt an improper approach to eating which might lead to ineffective nutritional attitudes. Therefore, the purpose of the present study was to investigate the effectiveness of Mindfulness-Based Stress Reduction (MBSR) intervention on the body image concerns of adolescent girls with dysfunctional eating attitudes.

Method: For this purpose, an experimental design with pre-test, post-test, control group, and follow-up was used. The population included 200 high school girls of Isfahan, Iran, from whom a sample of 30 students was selected based on the inclusion criteria and was randomly assigned into experimental and control groups. The experimental group received MBSR intervention for eight 90-min sessions and the control group received no intervention. Following the intervention, the two groups were post-tested and to assess the sustainability of the intervention effect, both groups were followed up 40 days later. Data were collected by the Eating Attitude Test and Body Image Concern Inventory and analysed using analysis of variance.

Results: The findings of the study indicated that MBSR influenced the body image of adolescent girls with dysfunctional eating attitudes, and there was a significant difference between the experimental and the control groups in body image concerns ($p < .001$).

Conclusion: It might be concluded that MBSR can be effective in improving the body image of adolescent girls with dysfunctional eating attitudes.

KEYWORDS

adolescent girls, body image concerns, dysfunctional eating attitudes, mindfulness-based stress reduction

1 | INTRODUCTION

Adolescence is one of the most stressful periods of one's life. In adolescence, major changes occur in all aspects of life (physical, psychological, cognitive, and social), making this period one of the most critical periods of one's growth. Therefore, in this period, on the one hand, an individual faces personal, social, occupational, and familial problems and, on the other hand, a wide range of physical and cognitive changes happen which require specific behavioural and cognitive strategies for adaptation (Pompili et al., 2009).

Studies show that due to the adolescents' changing attitudes towards their body image and competing with their peers in sports activities, the risk of eating disorders is higher in adolescence, as compared to other age groups (Weissman & Beck, 1978). In the case of eating disorders, evidence suggests that a set of inefficient attitudes are shared among the individuals with eating disorders (Engel et al.,

2006) and since body image concern is one of the main attributes for the diagnosis of eating disorders (Jansen, Nederkoorn, & Mulkens, 2005) and plays a major role in the continuation of inefficient attitudes (Tuschen-Caffier, Vögele, Bracht, & Hilbert, 2003), individuals with dysfunctional eating attitudes might have a distorted mental image of their body and might fear weight gain (Sim et al., 2010).

Body image concern or disturbance is a multi-faceted construct including perceptual, behavioural, cognitive, affective, and subjective processes (Thompson, Heinberg, Altabe, & Tantleff-Dunn, 1999). The affective facet includes feeling discomfort, stressed, or nervous about one's appearance. The cognitive facet might include forming an unrealistic expectation for one's appearance (e.g., the aspiration to look like a fashion model) or the idea that being thin brings happiness. The behavioural facet includes avoiding body scrutiny or situations such as going to the beach or changing clothes in a locker room that might lead to body scrutiny and scan. For the majority of individuals, especially adolescents, body image distress might play a significant role in their sensitivity to weight loss/gain (Sarwer, Grossbart, & Didie, 2001).

Epidemiologic research shows that adolescent girls are more likely to have misconceptions about their body form than other age groups. In addition, the sociocultural idealisation of slimness negatively influences the body image conceptualisation in this age group and might result in impaired performance, decrease the quality of life, and provoke the thoughts and attempts for committing suicide (Phillips, 2006). Based on the current statistics, women are more likely to experience dysfunctional eating attitudes originated from the body image (Borowsky, Eisenberg, Bucchianeri, Piran, & Neumark-Sztainer, 2016), so to tackle this issue, various psychological interventions, such as mindfulness-based interventions, were proposed.

Kabat-Zinn defined mindfulness as the "awareness that emerges through paying attention on purpose, in the present moment, and non-judgmentally to the unfolding of experience moment by moment" (Kabat-Zinn, 2003, p. 145). Referring to the psychology literature, researchers (e.g., Bishop et al., 2004; Le, Ngnoumen, & Langer, 2014) commonly tend to accept Kabat-Zinn's definition of mindfulness, but the exact components constitute mindfulness have changed along with the research progress. For instance, Bishop et al. (2004) describe mindfulness as having two different dimensions: *attention* towards present time experiences and an *awareness* of what happens in the present time. Various therapeutic techniques benefited from mindfulness practices among which we might refer to Mindfulness-Based Cognitive Therapy (MBCT) and Mindfulness-Based Stress Reduction (MBSR) which is the focus of the present study.

What is already known about this topic

- Body image concern is one of the main attributes for the diagnosis of eating disorders
- Individuals with dysfunctional eating attitudes might have a distorted mental image of their body
- A set of inefficient attitudes are shared among the individuals with eating disorders

What this topic adds

- The defining feature of mindfulness is its ability in identifying dysfunctional thinking patterns and helping the individual to get rid of them
- MBSR was proven effective on the body concerns
- The relaxation techniques used in MBSR help individuals to consciously develop an awareness of different parts of their body

MBCT is one of the new innovations in cognitive behavioural therapies that combine spiritual traditions of the East, including meditation and mindfulness, with the traditional Cognitive Behaviour Therapy (CBT) (Lucas-Carrasco & Salvador-Carulla, 2012). This therapy focuses on cognitive-behavioural relapse prevention skills (e.g., identifying high-risk situations and coping skills training), and mindfulness. The practices used in MBCT aim to enhance acceptance and awareness through a special focus on physical and emotional distress and to teach patients to observe their emotional, sensory and cognitive states without an involuntary response (Shamili, Zare, & Oraki, 2013). In addition to raising the individual's awareness of the present moment, MBCT uses techniques such as attention to breathing and body, and focusing the attention on "here and now" to influence the cognitive and information processing systems. In fact, MBCT focuses on the development of metacognitive awareness and the correction of meta-cognitive processes that lead to the continuation of mental ruminations (Kenny & Williams, 2007).

Among the common psychological interventions for body image concerns, now the therapists are much interested in the third generation of treatments (Hayes & Strosahl, 2004) and there is a wide range of non-medical therapeutic interventions belonging to the third generation of treatments that can be used for the treatment of body image concerns, including Cognitive Behavioural Group Therapy, MBCT, rational-

emotional-behavioural therapy, narrative therapy, meta-cognitive therapy, Acceptance and Commitment Therapy.

MBSR intervention is one of these treatments, which was developed by Kabat-Zinn and Hanh (2013) at Massachusetts Medical University. MBSR is a kind of awareness that arises when we focus on our experiences with a specific topic; it implies goal-oriented attention (i.e., attention that is clearly focused on certain aspects of the experience); it focuses on the present time (when the mind focuses on the past or the future, we return it to the present time), and it is non-judgemental (i.e., accepting what has happened) (Crane, 2017).

As stated by Segal, Williams, and Teasdale (2002), MBSR program is an intensive psychological, constructive, and reference-focused program that has been used in a number of therapeutic environments (e.g., hospitals and schools), and is based on cognitive-based mindfulness principles. According to Astin (1998), mindfulness techniques help the individual to view content in an unbiased and objective manner and MBSR program reduces the amount of stress and helps the individual to balance his emotions (Bishop, 2002). In fact, mindfulness helps confrontation with all aspects of life, even painful ones, and gives an individual the ability to respond to an automatic response (Reibel, Greeson, Brainard, & Rosenzweig, 2001).

In this regard, Levoy, Lazaridou, Brewer, and Fulwiler (2017) reported that treatment for reducing mental stress reduces emotional exertion. In a part of their findings, de Jong et al. (2016) reported that cognitive-based therapy would lead to body awareness and reduce depression. Bamber and Schneider (2016) also showed that cognitive-based stress management reduces stress and anxiety in newly arrived students, and students are more likely to become involved in new environments, social settings, and academic activities. The results of Johnson, Emmons, Rivard, Griffin, and Dusek's (2015) study showed that MBCT reduces stress, depression, and anxiety. Among the studies used MBSR, Song and Lindquist (2015) investigated the effect of MBSR on depression, anxiety and stress of nursing students. The results revealed the efficacy of this therapy in reducing depression, anxiety, and stress, and increasing their mindful awareness. They showed that anxiety disorders were influenced by mindfulness training which reduced depression and stress and Snippe, Dziak, Lanza, Nyklíček, and Wichers (2017) also studied the effect of MBSR on perceived stress, negative affect, and stress sensitivity and concluded that MBSR reduced the negative affect and the extent to which individuals perceived their days as stressful. Moreover, they reported a "dose–response relationship" between the reduction in negative affect and stress and the amount of mindfulness practice.

What distinguishes MBSR from other mindfulness-based interventions and what was the reason for the selection of this therapeutic technique over others for the present study was that MBSR is able to correct the body image concerns and the emotions associated with it through developing a new attitude, acceptance without judgement, approaching the emotions related to thoughts and body feelings to get rid of negative moods (Eisendrath, Chartier, & McLane, 2011). Furthermore, through meditation and yoga exercises specially designed to reduce stress and encouraging certain mental orientations towards an experience, MBSR enhances the non-judgemental awareness of the present time and minimises the involvement in thoughts (Potek, 2012), especially those related to body image.

In fact, mindfulness acts like a microscope, which shows the deepest mental patterns. When the mind is observed in practice, one realises that his thoughts automatically disappear. In other words, the simple act of observing thoughts, by keeping them in a larger space, stops and pushes them away. As a result, the restless mind would be calmed, not because the thoughts have calmed down, but because they are allowed to be, at least for a moment, as they are (Williams & Penman, 2011). Mindfulness skills also allow us to evaluate events less distressing than they are at the moment. When we are aware of the present time, we are no longer involved in the past and future.

Therefore, considering the importance of correcting the body image of adolescent girls with regard to its future effects and the necessity of choosing an appropriate intervention for its correction, the present study aimed to investigate the effectiveness of MBSR in general, and to study the effectiveness of this treatment on the body image concerns of adolescent girls with dysfunctional eating attitudes in particular.

2 | METHOD

2.1 | Statistical population, sample and research method

The present study utilised an experimental design with pre-test, post-test, control group, and follow-up. The statistical population of the present study included high school girls in the third educational region of Isfahan, Iran, in 2017. After obtaining the required permissions, the sample was selected from 200 high school girls who met the inclusion criteria, namely having a dysfunctional nutritional attitude, as claimed by the school psychologist or parents; scoring more than 20 in Eating Attitude Test (EAT-26) and being in the

TABLE 1 Age composition of the participants

	Age composition		
Group	**16**	**17**	**18**
Experimental	40%	40%	20%
Control	33.3%	46.6%	20%

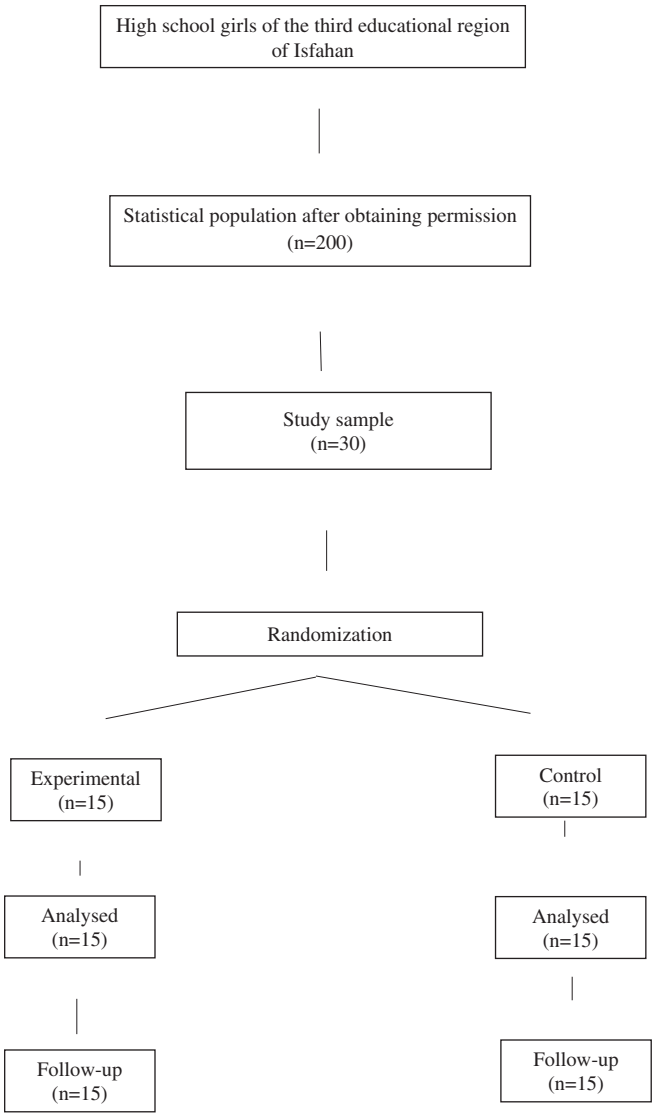

FIGURE 1 Participants' flowchart

age range of 16–18. Furthermore, the exclusion criteria considered were lack of cooperation and not doing the intervention assignments; more than two sessions of absence; taking psychiatric medicines; having acute or chronic psychiatric disorders such as depression diagnosed by a psychiatrist and the clinical interview conducted by the researchers. In general, 30 adolescent girls (Table 1) were selected based on the inclusion criteria and were randomly assigned to experimental and control groups (each including 15 participants). The CONSORT flowchart of the selection and participation of the participants is presented in Figure 1.

2.2 | Instruments

2.2.1 | Body Image Concern Inventory

This inventory which was developed by Littleton, Axsom, and Pury (2005) includes 19 items (e.g., "I am dissatisfied with some aspect of my appearance" or "I feel others are more physically attractive than me") with a five-point Likert scale ranging from 1 (never) to 5 (always) to examine the discontent and concern of the person about his appearance. This instrument consists of two factors, the first factor is dissatisfaction with and embarrassment over one's appearance and examining and concealing the perceived defects. The second factor shows the degree of the body image concern's influence on the social functioning of the individual. The scores between 19 and 38 imply low body image concern; the scores between 38 and 57 show middle body image concern and scores higher than 57 indicate high body image concern. Littleton et al. (2005) reported the Cronbach's alpha coefficient of .93, .92, and .76 respectively for total items, and first and the second factors of this inventory. In Iran, Alavi-Zadeh and Entezari (2011) reported the internal consistency of .89 for this inventory and the reliability of the Body Image Concern Inventory estimated by Cronbach's alpha was .84 in the present study.

2.2.2 | The Eating Attitude Test

The early version of the EAT which included 40 statements (e.g., "Find myself preoccupied with food" or "Feel extremely guilty after eating") was developed by Garner and Garfinkel (1979). In subsequent studies, due to the length of the test and the concern for its validity and reliability, a 26-item version with fairly good validity and reliability was developed by the same authors in 1989. The EAT-26 is the most commonly used standard instrument for measuring the nutritional disorders' syndrome and the cut-off score for this test is 20. The score above 20 indicates the need for an investigation by a professional (Dotti & Lazzari, 1998). The recent version has been used in many studies and has three subscales of dietary habits, tenderness and eating habits. Nunes, Camey, Olinto, and Mari (2005) evaluated the validity and reliability of the test and reported a reliability coefficient of .75 for each item. In a study conducted in Iran, Cronbach's alpha coefficient of the whole scale was .82 (Molazadeh Esfanjani, Kafi, & Yeganeh, 2012). The EAT-26 was used in the present study to select the adolescent with the dysfunctional eating attitudes. In fact, it was used for the initial selection of the sample. The reliability of the EAT estimated by Cronbach's alpha was .79 in the present study.

2.3 | Procedure

After explaining the research objectives in the introductory session, the experimental group underwent eight sessions (90-min sessions, weekly basis) of MBSR. One week after the end of the intervention, post-test was administered

TABLE 2 Mindfulness-Based Stress Reduction sessions

Session	Session theme	Content
1	Awareness	Introduction, mindfulness as a way of life, meditation eating raisins, feedback and discussions on eating exercises, discussions about auto guidance, body scan, feedback and discussion about body scanning. Guide to breathing meditation (15 min).
2	Perception and creative responding	Yoga, discussion about the interaction between mindfulness activities, familiarity with home activities and body scan, discussion of the mindfulness attitude: (no striving, doing abandoning, no judging, etc.), practicing thoughts and feelings, introducing sitting meditation, sitting meditation guide (10 min), feedback and discussion about sitting meditation.
3	The pleasure and power of being present	Yoga, sitting meditation (15 min), seeing and hearing exercises (5 min), training 3-min breathing space, Reading and reflecting on the article "mindful eating," meditation guide and seven myths and misconceptions about meditating, preparing a calendar of pleasant events at home.
4	Reacting on autopilot	Yoga, sitting meditation, awareness of breathing, body, sounds and thoughts, discussion about stress and alternative responses and attitudes towards stressful situations, discussion of the pain relief article, and then teaching STOP technique, completing the calendar of inconvenient events and completing the STOP pain report at home.
5	Creative ways of responding to stress	Yoga, sitting meditation, awareness of breathing, body, sounds and thoughts, meditation of love and kindness, and Reading kindness prayers, introducing troublesome thoughts and memories, discussing mindfulness attitude (acceptance, etc.) breathing exercises (3 min), discussion and feedback on insight dialogue, mindfulness and compassion, completing the relationship worksheet at home.
6	Mindful communication	Yoga, sitting meditation, awareness of thoughts, breathing exercises, discussing conflict management styles and managing anger in a conscious mind, completing the worksheet for informal practice.
7	Taking care of yourself	Yoga, sitting meditation, breathing awareness, body, voices and thoughts, teaching RAIN technique, Reading and feedback on the article "excitement alchemy", completing report of RAIN form at home.
8	The rest of your life	Yoga, sitting meditation, conclusions, discussion on how to integrate mindfulness exercises into our lifestyle. Writing three short-term goals (3 months) and three long-term goals (3 years).

among both experimental and control groups and then, 40 days later, follow-up phase was conducted. The intervention was conducted by the first researcher of the present study who has completed the MBSR training courses and is a certified Yoga trainer. In order to observe ethical issues and prevent possible negative consequences, the participants were ensured the confidentiality of the information. To analyse the research data, the mean and *SD* of scores were obtained and analysis of variance was run. The MBSR treatment sessions were based on the treatment protocol by Kabat-Zinn and Hanh (2013) briefly described in Table 2.

2.4 | Findings

In Table 3, the descriptive statistics of the body image concerns are shown for the experimental and control groups. As can be seen in this table, there was no significant difference between the experimental and control groups in the pre-test

TABLE 3 Descriptive statistics of body image concern by groups

		Experimental		Control	
Variable	**Stage**	**Mean**	***SD***	**Mean**	***SD***
Body image concern	Pre-test	84.06	5.20	83.60	5.01
	Post-test	29.20	4.09	85.33	6.14
	Follow-up	29.46	3.96	84.26	4.37

TABLE 4 Analysis of variance for pre-test, post-test and follow-up scores of body image concern

Scale	Source	df	*F*	*p*	Eta squared
Within group	Factor	2	418.5	.00	.93
	Interaction effect	2	459.82	.00	.94
Between group	Group	1	800.08	.00	.96

Note: Body image concern was measured by Body Image Concern Inventory (BICI).

TABLE 5 Post hoc test for body image concern

Scale	Stage A	Stage B	Mean difference	SD	*p*
Body image concern	Pre-test	Post- test	26.56	1.12	.00
		Follow-up	26.86	1.24	.00
	Post-test	Follow-up	−.03	.76	.98

Note: The mean difference is significant at ($p < .05$).

stage ($p = .29$, estimated by independent samples *t*-test); however, the experimental group scores of body image concerns reduced in the post-test and follow-up stages. The results of the Kolmogorov–Smirnov and Levene tests showed that the normality and homogeneity assumptions were met ($p = .8$).

The results of Table 4 show that, with regard to the within-group source, the interaction effect of time and group was significant for the scores of the three measurements of pre-test, post-test, and follow-up of the body image concerns ($p < .001$). Moreover, considering the between-group comparison, it can be stated that there was a significant difference between the experimental and the control groups in the body image concerns ($p < .001$). That is, MBSR significantly influenced the body image concerns in adolescent girls with dysfunctional eating attitudes and led to an improvement in the body image concerns of these adolescent girls.

As can be seen in Table 5, there was a significant difference between the pre-test and follow-up phases of the study with regard to the body image concerns. These results indicated that MBSR influenced the body image concerns and led to an improvement in body image concerns of adolescent girls with dysfunctional eating attitudes. However, the difference between post-test and follow-up was not statistically significant.

3 | DISCUSSION

The present study is the first study conducted to alter the dysfunctional eating attitudes in adolescent girls using MBSR. Based on the results, MBSR was proven effective on the body image concerns and reduced these concerns in adolescent girls with dysfunctional eating attitudes. Furthermore, the improvement observed in the participants was stable, as it was shown in the follow-up scores.

In explaining the effectiveness of MBSR intervention on body image concerns of adolescent girls with dysfunctional eating attitudes, it should be stated that MBSR intervention helps the individual get rid of the negative thoughts and less blame himself (Sharma & Rush, 2014). It also changes the individual's assessment of different events; prevents him from making negative self-judgements, and helps him effectively confront individuals, events and attitudes that lead to increased stress. Furthermore, the relaxation techniques used in MBSR help individuals to consciously develop an awareness of different parts of their body, and to gradually reduce the tensions, discomfort, and stress. In other words, affect regulation models of disordered eating problems, such as MBSR, postulate that besides dysfunctional private events (e.g., negative affect and disordered cognitions), regulation processes have a vital role in the beginning and persistence of eating problems (Aldao & Nolen-Hoeksema, 2010; Lavender & Anderson, 2010; Rawal, Park, & Williams, 2010).

The findings of the present study might be justified by Ganji (2014) who stated that mindfulness exercises raise self-esteem and create a positive body image. He believes that concerns about body image are an important factor in eating dysfunctions and have been shown to have a significant effect on the treatment of such dysfunctions. When the self-esteem raises, a positive body image will be formed and negative feelings will be lowered, all of which significantly influence the improvement of eating dysfunctions through reinforcing a non-judgemental behaviour, self-acceptance, and understanding the inner power.

Along the same lines, Segal et al. (2002) suggested that the defining feature of mindfulness is its ability in identifying dysfunctional thinking patterns and helping the individual to get rid of them and that regular mindfulness practices might improve anxiety and mood symptoms. As it was the case in the present study, mindfulness reduced the body image concerns of the adolescents and its positive effects lasted even

after the end of the treatment, as it was revealed in the follow-up scores.

Furthermore, mindfulness interventions might be preferable to CBT interventions since they act at a more global level to reduce the psychosocial impairment and negative feelings result from body image concerns or dissatisfactions and to enhance body satisfaction (Alleva, Sheeran, Webb, Martijn, & Miles, 2015; Atkinson & Wade, 2014). Dijkstra and Barelds (2011) found that non-judgement, as the central feature of mindfulness, is related to body image, that is, being mindful through low judgement is highly associated with body satisfaction. However, there might be more to the association between mindfulness and body image concerns than proposed and other influential features of mindfulness such as the acceptability facet of mindfulness intervention persuade the individual to accept his appearance.

Similar to the findings of the present study, using CBT for treating negative body image, Rosen, Orosan, and Reiter (1995) reported that the therapy modified the intrusive recurrent thoughts of body dissatisfaction and beliefs about body appearance. Margolis and Orsillo (2016) also compared cognitive-behavioural and acceptance-based approaches in reducing body dissatisfaction among college girls and found that both approaches were equally effective and finally, Cassone, Lewis, and Crisp (2016) investigated the effectiveness of a 6-week cognitive-behavioural group intervention in promoting the development of positive body image. The result of their study supported the overall effectiveness of this intervention.

As it was mentioned in the previous section, the MBSR effect was consistent from post-test to the follow-up stage of the study. This finding is consistent with Chiesa and Serretti (2009) who reported the consistent efficacy of MBSR for many mental disorders. Cohen-Katz, Wiley, Capuano, Baker, and Shapiro (2005) investigated the effect of MBSR on nurses' stress and burnout and concluded that the efficacy of this treatment maintained in the 3-month follow-up and finally, Carson, Carson, Gil, and Baucom (2004) used MBSR to enrich the couples' relationship. The results revealed the beneficial influence of this treatment on optimism, spirituality, relaxation, and psychological distress; moreover, the benefits maintained at the 3-month follow-up.

In accord with the findings of the present study, Alberts, Thewissen, and Raes (2012) found that an 8-week MBCT program significantly reduced eating for reasons other than hunger, food cravings, and body image concerns. Moreover, Atkinson and Wade (2014) found that a mindfulness-based intervention reduced weight and body shape concern, besides eating pathology, compared to a control group. Luethcke, McDaniel, and Becker (2011) reported the results similar to those of Atkinson and Wade; however, their findings revealed no increase in body parts' satisfaction and finally, the findings of the present study might be in some way in line with Levoy et al. (2017) who investigated the effect of MBSR intervention on the emotional eating of the individuals enrolled in the MBSR program. The results revealed that MBSR might be an effective intervention for emotional eating.

4 | CONCLUSION

In general, the findings of the present study suggest the applicability of MBSR intervention to reduce body image concerns of adolescent girls' dysfunctional eating attitudes. Abandoning negative judgements about oneself and effective coping with ineffective thinking and problems regarding body image and increasing self-control during treatment might lead to increased self-esteem in adolescents (Lai & Wong, 1998). Therefore, enhancing self-efficacy and self-esteem help alleviate the individual's fear of his body image and lead to positive behaviours in this regard. Accordingly, it is suggested that psychotherapists and psychologist use psychological interventions, especially the ones like MBSR, to help the treatment of individuals with dysfunctional eating attitudes. Such therapeutic approaches might accelerate the reduction in body image concerns in adolescents as these problems might negatively influence the family and pose new challenges to family life.

As stated in previous studies, there is a gender difference in inefficient nutritional attitudes; therefore, it is suggested that future studies consider gender differences and also consult the families of adolescent girls with dysfunctional eating attitudes to obtain more accurate results.

No study is devoid of limitations and this study is also no exception. The present study solely focused on adolescent girls with dysfunctional eating attitudes; therefore, its findings might not be generalisable to all adolescents and especially to the clinical population. The possible change in levels of the mindfulness of the participants was not checked in the present study though the focus of MBSR is on mindfulness techniques; therefore, future researchers are recommended to take this factor as an influential and important variable in their study. Another limitation of the study was the unblinded design. The study was conducted on school girls and the researchers were required to obtain permissions from different authorities including principals and parents and were required to explain the aims and objectives of the study. Nevertheless, when it came to the participants, they were just provided with very general information about research objectives, as an ethical consideration, and no details about the intervention sessions were disclosed. Last but not least, the sample size was small; therefore, caution must be applied in generalising the findings.

ORCID

Parya Khoshkerdar https://orcid.org/0000-0001-5208-9471

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How to cite this article: Khoshkerdar P, Raeisi Z. The effect of mindfulness-based stress reduction on body image concerns of adolescent girls with dysfunctional eating attitudes. *Aust J Psychol*. 2020; 72:11–19. https://doi.org/10.1111/ajpy.12265