

# Evaluating the Effectiveness of Mandala Coloring on Mental Health in Iran: A Systematic Review

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Received: 15 January 2022

Revised: 4 February 2022

Accepted: 3 March 2022

#### Abstract

**Background:** Mandala coloring is a branch of art therapy that significantly impacts maintaining and promoting various dimensions of mental health. However, it has received little attention as a complementary treatment to cure and prevent mental disorders. This study aims to evaluate, in a systematic way, the effectiveness of mandala coloring to promote its use for preventing and treating mental disorders.

**Methods:** This research is a systematic review study. To retrieve the articles, the authors used keywords “Art therapy”, “mandala coloring”, “mandala”, “mandala therapy”, and “coloring therapy” both in Persian and English. Available databases were used to collect the articles. Then, based on the inclusion and exclusion criteria, only five articles were recognized as eligible and included in the study.

**Results:** The findings of this study showed that research on mandala coloring as a mental health complementary therapy is minimal in Iran.

**Conclusion:** Despite the effectiveness of mandala coloring on various dimensions of health and its ease of use and access, this complementary therapy is still unknown and limitedly used in Iran. Accordingly, further research is needed in this field to apply their results in medicine and education.

Please cite this article as: Hosseini M, Borzabadi Farahani Z. Evaluating the Effectiveness of Mandala Coloring on Mental Health in Iran: A Systematic Review. *J Health Sci Surveillance Sys*. 2022;10(2):144-149.

**Keywords:** Art therapy, Mental health, Systematic Review

## Introduction

Art therapy is a method based on maintaining health and improving physical, social, and emotional behaviors in people of different ages, effective in treating many psychological problems.<sup>1</sup> Mandala coloring is one of the branches of art therapy.<sup>2</sup> “Mandala” is a compound word originating from the ancient Hindi language, derived from the root “mandala”, meaning “center and essence”, and the suffix “la”, meaning “container”.<sup>3</sup> Mandala, which means “circle”, refers to a form of color therapy that aims to enhance self-awareness, help reach innate spirituality and unity of existence, and create an inner world focused on order and peace.<sup>4</sup> In other words, mandala coloring helps to forget the destructive and unfavorable inner thoughts such as stress by focusing

on self and existential spirituality.<sup>5</sup> Also, the word “circle”, which expresses the literal meaning of mandala, is reminiscent of mysticism and the mystic rituals of whirling dervishes to get free of the world’s problems around them and to reach their selves and spirituality.<sup>6</sup> Art therapy effectively reduces anxiety and improves self-concept, quality of life, problem-solving ability, and communication abilities in children with asthma.<sup>7</sup> Also, art therapy in children with learning disabilities leads to greater social, emotional, and academic adjustment.<sup>8</sup> As a branch of art therapy, color therapy is also effective on the self-esteem of educable mentally-retarded children.<sup>9</sup> The results of a study conducted in the southern United States showed that painting on a blank piece of paper and coloring mandalas with colored pencils significantly reduced students’ situational anxiety.<sup>10</sup> In another study

conducted in Pakistan, the use of mandala coloring as a therapeutic intervention could reduce students' anxiety and stress and lead to improved job results and quality of life.<sup>11</sup> Also, based on the findings of the studies, it was revealed that mandala coloring is effective in reducing stress, anxiety, and negative self-attitude.<sup>12</sup> In another study, mandala coloring effectively reduced anxiety and anger and increased thinking efficiency.<sup>2</sup> In different decades, the most common medical treatments for mental health problems have been medications and psychological counseling. Although this approach continues to be used, many people are reluctant to follow it due to concerns about drug side effects and not being wholly cured with medications.<sup>13</sup> On the other hand, several studies have investigated the financial and economic burden of psychiatric disorders on different societies in recent years. Their results indicate that patients with psychiatric disorders spend much money annually on their treatment, and many of them may stop treatment due to economic problems.<sup>4</sup> Accordingly, preventive measures and the use of complementary therapies and pharmacological therapies have gained more importance in recent years.<sup>13</sup> Considering the scope of the effectiveness of mandala therapy and its impact on various parts of personal and social functioning as well as the necessity of using such techniques as a complementary treatment, the researchers attempted to answer the following questions on the effectiveness of mandala coloring in Iran: 1. How is mandala coloring effective on different variables in Iran? 2. Which groups does mandala coloring affect? 3. What are the factors which make the intervention more effective?

## Methods

To collect the articles, the authors evaluated and examined PubMed, web of Science, Scopus, and Google Scholar databases to access English articles. At the same time, they investigated SID, Google Scholar, and Magiran databases to access Persian ones. To retrieve the articles, the authors used keywords: "Art therapy", "mandala coloring", "mandala", "mandala therapy", and "coloring therapy" both in Persian and English. First, they extracted the articles; then, they reviewed and compared the titles and abstracts while the articles unrelated to the main topic were discarded. Inclusion criteria were as follows: 1. The study should be in Persian or English. 2. The full text of the study should be available. 3. The study should be a clinical trial. 4. The study population should be in

Iran. 5. The independent variable in the study should be mandala or mandala coloring. The exclusion criterion was being a descriptive and qualitative study. Searching for keywords, 346 articles, including 172 English articles and 174 Persian ones, were extracted without any time limit in the search until March 2021. Only four out of 346 articles were eligible and included in the study. Also, one study, which had inclusion criteria, was extracted from the articles and indirectly included in the study. To collect the data, the authors used the data extraction form, including the title and purpose of the article, the name of the first author, sample size and specifications, sampling method, and the results and findings. In addition, two researchers assessed the quality of these studies by a CASP (Randomized Controlled Trial Standard Checklist). This checklist is a qualitative report consisting of eleven three-choice questions about the studies' structure, methodology, results, and impact on society. The studies that answered yes to more than half of the questions were included in the study (Table 1).

## Results

After examining the titles and abstracts of the articles, discarding the duplicate ones and unavailable studies, and applying inclusion and exclusion criteria, only 1 English research and 3 Persian articles were selected and included in the study. Also, the study by Zahra Ruzrokh and Azita Amirfakhraei, which had the inclusion criteria, was extracted from the articles and indirectly included in the study. (Figure 1). All the studies were conducted on children and adolescents, and only one studied adults. These studies examined the effect of mandala coloring on variables, including children's

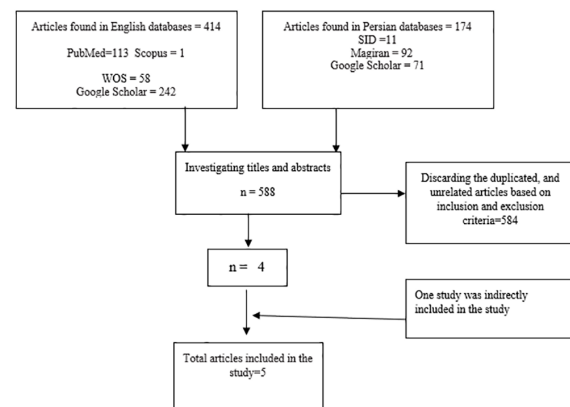


Figure 1: Flow chart of studies included in this review study.

Table 1: Results of quality evaluation of studies based on Randomized Controlled Trial Standard Checklist

Study title	Answers		
1. The Effectiveness of Color Therapy by Mandala Designs Method on Students' Anger of the Second Period Girl Elementary School	YES: 10	NO: 1	Cannot tell: 0
2. The Effect of Mandala Art Therapy on Reducing Anxiety in Women with Substance Abuse	YES: 8	NO: 2	Cannot tell: 1
3. Investigation of the Effect of Coloring Therapy on Reducing Anxiety and Enhancing Self-Image in Normal and Wrong-Doer Teenage Girls	YES: 9	NO: 1	Cannot tell: 1
4. The Effectiveness of Mandala Therapy in Reducing Adolescent Anxiety	YES: 10	NO: 1	Cannot tell: 0
5. Mandala Coloring as Jungian Art to Reduce Bullying and Increase Social Skills	YES: 6	NO: 3	Cannot tell: 2

**Table 2:** Characteristics of clinical trials reviewed in the study

Title and purpose of the study	Author's name	Sample size and specifications	Type of study	Instrument	Duration and frequency of coloring sessions	Conclusion
Mandala Coloring as Jungian Art to Reduce Bullying and Increase Social Skills <sup>15</sup>	Anahita Khodabakhshi-Koolae et al.	30 working children aged 10 to 12	Randomized convenience sampling	Illinois Bully Scale (IBS) and Teenage Social Skills Inventory (TSSI) Pre-test and post-test with a control group	Ten 45-minute sessions	Mandala coloring effectively reduces bullying and increases the social skills of working children.
The Effectiveness of Mandala Therapy in Reducing Adolescent Anxiety <sup>3</sup>	Hossein Ghamari Kivi et al.	45 adolescents aged 15 to 18 years	Randomized	Spielberger State-Trait Anxiety Inventory Pre-test and post-test with one control group and two intervention groups	One 20-minute session	Coloring therapy, especially mandala therapy, significantly reduced the anxiety level of the participants.
Investigation of the Effect of Coloring Therapy on Reducing Anxiety and Enhancing Self-Image in Normal and Wrong-Doer Teenage Girls <sup>4</sup>	Zahra Lobadi et al.	55 high-school students	Randomized multi-stage	Cattell Anxiety Test and Saraswat Self-Concept Questionnaire Pre-test and post-test Single-group and no control group	10 sessions with increasing duration	All moral, social, intellectual, educational, and cognitive subscales in the Saraswat Self-Concept Questionnaire have improved, and the level of anxiety of the participants also decreased after the intervention.
The Effect of Mandala Art Therapy on Reducing Anxiety in Women with Substance Abuse <sup>14</sup>	Mohadeseh Saberi Tilaki et al.	30 women with substance abuse	Randomized convenience sampling	Zung Self-Rating Anxiety Scale Pre-test and post-test with a control group	Eight 60-minute sessions	Mandala coloring was an effective non-pharmacological method to reduce anxiety in women with substance abuse.
The Effectiveness of Color Therapy by Mandala Designs Method on Students' Anger of the Second Period Girl Elementary School <sup>16</sup>	Zahra Ruzrokh and Azita Amirfakhraei	80 elementary school girls, Grade II	Simple randomized	Novaco Anger Scale	11 sessions in one month using colored pencils	Generally, color therapy as mandala coloring reduces the students' anger.

anxiety, self-concept, anger, bullying, and level of social skills (Table 2). The study by Hossein Ghamari Kivi et al. investigated the effectiveness of mandala coloring on anxiety in 45 adolescents aged 15 to 18 years old in the city of Garmsar. This study measured the anxiety level of the participants in pre-test and post-test using Spielberger State-Trait Anxiety Inventory and stated that one 20-minute session of coloring therapy, especially mandala therapy, significantly reduced the anxiety level of the participants.<sup>3</sup> Also, in their study, Mohadeseh Saberi Tilaki et al. evaluated the effect of mandala therapy on reducing anxiety in 30 women with substance abuse in the city of Sari in two stages of pre-test and post-test using the Zung Self-Rating Anxiety Scale. In this study, 15 women in the intervention group were treated by mandala therapy for eight 60-minute sessions, and the results indicated that mandala coloring was an

effective non-pharmacological method to reduce anxiety in women with substance abuse.<sup>14</sup> In their study, Zahra Lobadi et al. evaluated the effect of coloring therapy on reducing anxiety and improving the self-concept of 55 normal and delinquent adolescent girls in the city of Karaj through 10 treatment sessions using the Cattell Anxiety Test and Saraswat Self-Concept Questionnaire in two stages. Based on the results of this study, all moral, social, intellectual, educational, and physical subscales in the Saraswat Self-Concept Questionnaire were improved, and the participant's level of anxiety was also decreased after the intervention.<sup>4</sup> In their study, Anahita Khodabakhshi-Koolae et al. examined the effectiveness of mandala coloring in reducing bullying and increasing social skills in 30 working children aged 10 to 12 in the city of Tehran, using the Illinois Bully Scale (IBS) and Teenage Social Skills Inventory (TSSI). Based on

the results, mandala coloring was effective in reducing bullying and increasing social skills of working children and was considered as an appropriate psychological therapy to create empathy and increase social skills in educational centers and schools for working children.<sup>15</sup> In research on 80 elementary school girls, Zahra Ruzrokh et al. found that mandala coloring effectively reduced the students' anxiety.<sup>16</sup>

## Discussion

This study aimed to evaluate, in a systematic approach, the effectiveness of mandala coloring in Iran. This study revealed the effect of mandala therapy on variables including anxiety, self-concept, bullying, anger, and children's level of social skills. The study showed that mandala coloring effectively affects the mental and social functioning of different age groups.

These findings are consistent with the statements of Kim et al., pointing to the positive effects of mandala coloring on various variables such as mental health, self-awareness, self-confidence, mood, and burnout.<sup>17</sup> Also, various studies have identified the effect of mandala coloring on reducing students' anxiety, improving depression after stroke, and mental strengthening.<sup>18</sup> Each of the studies examined here had its strengths and limitations; being aware of these strengths and limitations can help prospective researchers to investigate them in future studies. We will discuss these strengths and limitations in detail: 45 adolescents aged 15 to 18 years old participated in the study by Hossein Ghamari Kivi et al., which examined the effectiveness of mandala coloring in reducing adolescents' anxiety. The appropriate sample size and the age limit were among the study's strengths, which eliminated confounding variables such as age difference.

On the other hand, the study ignored the participants' gender as a confounding variable; therefore, the results' generalizability to both genders is under question. Also, the method of conducting this research was based on recalling an experience that causes great fear in people. As the intervention sessions were performed in 5-participant groups, being among peers might not lead to complete anxiety arousal in them. On the other hand, recalling an event per se may not cause anxiety in the individual because long time passed that event. Further, this study did not include individual differences in dealing with an event. The participants had ten different colors to color the mandalas, which gave them the freedom to choose.<sup>3</sup> However, the question arises that whether the researcher had a scientific reason and logic for choosing those ten fixed colors. If the researcher used another ten colors, would the results be different? In this study, the intervention was performed in only one 20-minute session, which seems less than what

is required to stabilize the effect of an intervention to generalize the results to the population.

Saberi Tilaki et al. evaluated the effect of mandala therapy on reducing anxiety in addicted women. They assigned 30 women residing in a drug abuse treatment center to two groups of intervention and control.<sup>14</sup> The small number of participants could be one of the limitations of this study. Also, they asked the participants to observe the process of improving thoughts after coloring sessions by using the technique of writing negative thoughts on the back of the coloring sheets. This event increased the effectiveness of mandala therapy. However, it should be noted that not all people may be literate to write or may be able to express their thoughts in this way, so it would be better to have a counselor on the spot to listen to their feelings and observe them as emotions emerge before and during the coloring sessions. Anxiety was measured in two pre-test and post-test stages using the Zung Self-Rating Anxiety Scale. Continuation of coloring for eight weeks and spending enough time in each session (60 minutes) and doing homework could positively increase the effectiveness of the mandala. Also, presenting several designs to the participants at the same time to choose their favorite design was effective in creating a sense of security and peace. These results should be evaluated in other age and sex groups.

Zahra Lobadi et al. evaluated the effect of mandala coloring on reducing the anxiety of delinquent adolescent girls.<sup>4</sup> Fifty-five high-school girls aged 14 to 16 years old participated in this study. This age limit and the statistical population negatively affected the generalizability of the results. Nevertheless, the continuation of mandala therapy during one month, more sessions per week, development of mandala designs from simple to complex, dedicating separate sessions to getting acquainted with the mandala design and listening to the inner voice, and changing it can have a positive effect on the effectiveness of mandala therapy. In addition to writing negative thoughts on the page, the participants who do not follow this method may be asked to express their negative thoughts through speaking. The accuracy of these results should also be evaluated in other age and sex groups. It should be noted that creating a suitable environment, silence, and peace can enhance the participants' concentration and effectiveness of mandala therapy.

Zahra Ruzrokh et al. investigated the effect of mandalas coloring on anger. Eighty female students in the second grade of the elementary school participated in this study.<sup>16</sup> Due to the age and educational limitations and female gender, the study results could not be generalized to other age groups. However, the method of this study was similar to that in the study by Zahra Lobadi et al.



Anahita Khodabakhshi-Koolae et al. examined the effectiveness of mandala coloring on social skills and bullying in children. Boys aged 10 and 12 who were working children participated in this study.<sup>15</sup> The age, educational, and gender limitations influence the results' generalizability. In this study, ten goals were identified, and the mandala activities in each session were designed to be related to them. This action leads to more diversity and curiosity in continuing coloring and sessions.

In summary, one of the important limitations in the studies that need to be overcome by future research is to answer whether regular mandala designs are essential components of the effectiveness or similar results are obtained, for example, with designs such as landscape or portrait. Also, the studies have all been conducted on a small sample size with common characteristics. Therefore, it is suggested that future studies be conducted on larger samples of different genders, ages, mental status, history of underlying disease, literacy level, etc., and consider variables such as anger, depression, pain, dysmenorrhea, different mental status, interpersonal and social relationships, self-efficacy, and other variables. Another limitation of the research is the lack of evaluation of the effect of mandala coloring therapy in groups or individuals, which is noteworthy. It is also suggested that the environment where coloring activity is performed is considered as a variable affecting the participants' calmness and psychological security during the coloring activity.

Additionally, it is recommended to use other branches of art therapy, such as music therapy and mandala therapy to investigate their increased impact on various variables in future studies. According to the color theory, in mandala coloring, warm colors are placed toward the center of the circle and the cool ones toward the outside. Since warm colors are reflected to the outside and cold colors to the inside, this color arrangement in mandala coloring creates an integrated performance to achieve mood stability.<sup>18</sup> Also, the effective use of these colors leads to greater effectiveness. Given the insufficient attention to the effective use of colors in the five articles studied, it is suggested that based on color theory, warm colors should be used in the center and cool ones toward the outside of the mandalas in future studies.

This research can be used as a general guide for researchers interested in art therapy (mandala coloring) to learn about the activities carried out in this field in Iran. Also, they can recognize the weaknesses and limitations of the studies conducted to use more effective and novel methods in further interventions and develop therapeutic interventions such as mandala coloring in complementary medicine and help its growth.

In conclusion, due to the circular shape of the

mandalas, the individual's ability to control conscious and unconscious forces increases, leading to reduced stress and enhanced mental health and well-being.<sup>3</sup> According to Jung's theory, inner need makes man a complete and unique individual; mandala coloring helps the therapists to clarify the treatment stages and goals and the healing process through getting the clients focused on themselves.<sup>18</sup> Furthermore, mandala coloring allows people to forget the turmoil of their lives and focus on their coloring activity.<sup>17</sup> It also calms the person and influences the healing process.<sup>19</sup>

## Conclusion

This study showed that research on the effectiveness of mandala coloring on mental health is very limited in Iran. However, considering the wide range of mandala coloring effects in domestic and foreign studies, the factors increasing the efficiency of this complementary treatment, easy access, and low cost of the required tools, it is recommended to use mandala coloring for treating many mental disorders and stresses as a complementary therapy. It can also be used to prevent anxiety and maintain peace in different age and gender groups, schools, universities, and governmental organizations.

**Conflicts of interest:** None declared.

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