

Mandala Art Therapy as an Intervention for Depression, Anxiety, Stress and Resilience among University Students

T M Sneha^{1*}, Dr. Patrick Jude Lucas²

ABSTRACT

University students often grapple with the transition from adolescence to adulthood, a period filled with various challenges and stressors that can lead to mental health issues, particularly depression and anxiety. The National Mental Health Survey of India (NMHS) in 2015-16 identified a significant prevalence of mood-related disorders affecting 5.8% of Indian adults and anxiety disorders affecting 3.9%. These findings underscore the pressing need to address mental health concerns among the younger population, including university students. To explore potential interventions, a study was conducted to assess the effectiveness of Mandala Art Therapy in alleviating depression, anxiety, stress, and enhancing resilience in this vulnerable group. The term "mandala" is rooted in Sanskrit, an ancient Indian language, where it combines "Manda" (meaning center) and "La" to signify accomplishment, reflecting the therapeutic approach's focus on inner balance and well-being. The study employed a rigorous methodology, obtaining ethical clearance from the Institutional Ethical Committee and selecting 30 participants who met specific inclusion criteria. These participants were then given a comprehensive explanation of the study's purpose and procedures, followed by instructions regarding the intervention protocol. Over the course of four weeks, participants engaged in eight sessions of Mandala Art Therapy, with a frequency of two sessions per week. The study measured four main variables, namely depression, anxiety, stress, and resilience, both before and after the intervention. The results of this study demonstrated a significant positive impact of Mandala Art Therapy on the mental well-being of university students. Furthermore, individual assessments of depression, anxiety, and stress, as well as their collective effect, exhibited statistically significant improvements from pre- to post-intervention. In conclusion, this research underscores the potential of Mandala Art Therapy as an effective tool in reducing depression, anxiety, and stress, while simultaneously enhancing resilience among university students. The findings provide valuable insights into the positive impact of this ancient therapeutic approach, offering a promising avenue for addressing the mental health issues that often accompany the significant life changes and expectations faced by young adults pursuing higher education.

Keywords: *Mandala art therapy, Depression, Anxiety, Stress, Resilience, University students*

¹MSc., Department of Psychology, CHRIST (Deemed to be University), Bengaluru, India

²Assistant Professor, Department of Psychology, CHRIST (Deemed to be University), Bengaluru, India

*Corresponding Author

Received: January 04, 2024; Revision Received: February 08, 2024; Accepted: February 12, 2024

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Students are a special set of individuals who are leaving behind the most important stage of their lives, during which they go through numerous unpleasant experiences. Depression is a multi-problematic condition that places a significant cost on society and affects people's ability to perform in their personal, social, interpersonal, and professional lives. Anxiety is an internalized arousal of dread, which may be genuine or imagined. An unconscious response to depressed tendencies, anxiety has the potential to develop into acute dread or panic. The psychological and physical symptoms include shaking hands and lips, dry mouth, frequent urination, and restless sleep. According to past research on mental health issues, university students have mental health issues because they are not adequately prepared for future expectations, pressures, and greater obligations in both their academic and social lives. According to the National Mental Health Survey of India (NMHS), 2015–16, 5.8% of Indian adults suffer from mood-related disorders, while 3.9% of Indian adults suffer from anxiety disorders. The survey also shows that mood disorders (5.6%) and neurotic or stress-related disorders (6.93%) are more common in metropolitan metro areas by almost 2-3 times. Stress is a common reaction to pressures and obligations that may be temporary if they are perceived as harmful or hazardous. Anything that generates stress is known as a stressor. This might be a circumstance, an occurrence, or a person. Stressors are defined as personal or environmental occurrences that lead to stress.

The art therapy technique known as mandala therapy has been employed successfully in applied psychology. Sanskrit, an ancient Indian language, combines the terms "Manda" (which means centre) and "La" to form the word "mandala" (meaning accomplishment). It means getting to know people's core and essence, helping them be honest with themselves, and helping them develop a tranquil essence. Carl Jung, the creator of this type of psychotherapy, wrote down his dreams and drew them in a circle because he believed that Mandalas were a system that encoded human experience and served as a means of synchronization, support, and healing for anxieties and anxiety states. Carl Jung believed that difficult life situations, emotional tension, or crises called for the usage of mandalas. The main objective behind this research is to determine the efficacy of Mandala art therapy on depression, anxiety, stress and how it can help build resilience among university students. Coloring mandalas can help in reducing anxiety which in turn can enhance their work outcomes, and improve their quality of life. This research promotes coloring mandalas as a relaxation method that can be used as a self-help activity or as a tool in various settings such as academic, clinical, work, etc. mandala design as one of the activities suggest that a brief period of art making can significantly reduce a person's state of anxiety. According to the National Mental Health Survey of India (NMHS), 2015–16, 5.8% of Indian adults suffer from mood-related disorders, while 3.9% of Indian adults suffer from anxiety disorders. The survey also shows that mood disorders (5.6%) and neurotic or stress related disorders (6.93%) are more common in metropolitan metro areas by almost 2-3 times. Doing art through coloring, painting, or sketching is a good way to improve mood and reduce self-reported anxiety levels (Sandmire, 2012). Curry and Kasser's (2005) study, which investigated if coloring a mandala might lessen anxiety, was duplicated by Van der Vennet R. & Serice S. in 2012. Their study, which involved 50 psychology majors, found that participants with anxious moods have been capable of significantly lowering their 4 anxiousness by coloring a predawn mandala and reduced their anxiety to a larger extent than participants who colored free-form on a blank sheet of paper or those who colored a plaid design. These findings are like those of Curry and Kasser (2005). Babouchkina A. and Robbins S. (2015) research showed the mandala's circular form is an "active element" in mood boosting. The psychoanalytic theory backs Jung's Mandala technique from 1973,

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which claims that creating a symmetrical Mandala through drawing or painting has positive effects on cognition and mood because it may calm the "internal turbulence" of people's emotional states. In the past, research has shown that people's anxiety levels drop when they color Intricate patterns because of their calming and relaxing qualities (Henderson, Rosen, & Mascaro; 2007; Sandmire et al., 2012). The mindfulness method, which helps individuals to pay close attention and concentrate on the present moment, is supported by the usage of mandalas and is effective in cognitive-based tasks and academic circles (Carsley, Heath, & Fajnerova, 2015; Chen et al., 2019; Potash, Yun Chen, & Yan Tsang, 2016). As is often the case with creative pursuits, Jung (1973) discovered that the process of creating mandalas had a relaxing and healing impact on its creator while also enabling mental integration and being linked with the intrinsic potential to comprehend the divine (Allen, 2001; McNiff, 2004). As a fundamental tool for self-awareness, self-expression, resolving conflicts, assessment, and therapeutic repair, the mandala is utilized by a variety of psychotherapists (Cornell, 1994; DeLue, 1999; Elkis-Abuhoff, Gaydos, Goldblatt, Chen & Rose, 2009; Fincher, 1991; Fincher, 2002; Kellogg, Mac Rae, Bonny, & di Leo, 1977; Slegelis, 1987). One of the most often diagnosed mental health illnesses, generalized anxiety disorder is characterized by persistent worrying about a variety of topics for at least six months. It frequently coexists with depression. (2016) (Sue, Sue, Sue, & Sue). Doing art through coloring, painting, or sketching is a good way to improve mood and reduce self-reported anxiety levels (Sandmire, 2012). Rajendran (2020) proposed that coloring "therapeutic" pictures like mandalas, buildings, or made-up animals had more effective benefits on reducing anxiety than doodling with pens on white sheets of paper. Interventions involving mindfulness have been implemented to treat a variety of mental health problems, including anxiety, stress, and depression (Call, Miron, & Orcutt, 2013; Xu, Zhu, & Liu, 2019). A comprehensive therapy treatment plan, such as mindfulness-based stress reduction, might include mindfulness therapies (Kabat-Zinn, 1992). It has been 5 demonstrated that another component, mindfulness meditation, fosters resilience and lowers stress (Hwang et al., 2018). According to Kielo (1991), the act of creating art frequently communicates and brings to light previously unrecognized, unconscious knowledge (p. 14). Mandalas have been investigated as a burnout-reduction technique for nurses and as an assessment tool for those providing end-of-life care (Potash, Bardot, Wang, Chan, Ho, & Cheng, 2013). (Brooks et al., 2010).

Statement of the Problem

University students undergoing the transition from adolescence to adulthood often experience a range of mental health challenges, including depression and anxiety, which can be exacerbated by the demands of academic life and societal pressures. The National Mental Health Survey of India (NMHS) revealed a significant prevalence of mood-related and anxiety disorders among Indian adults. These findings underscore the urgent need to address the mental health concerns of young adults in the university setting. Therefore, the problem addressed in this study is how to effectively alleviate depression and anxiety, reduce stress, and enhance resilience among university students, especially during their pivotal transitional phase.

Rationale of the Study

The rationale for conducting this study is rooted in the recognition of the pressing mental health issues faced by university students during a crucial life stage. The transition from adolescence to adulthood brings about numerous challenges and stressors, which, when combined with the rigors of academia and societal expectations, can result in depression, anxiety, and stress. It is imperative to address these issues to safeguard the psychological

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well-being of young adults and equip them with the resilience needed to thrive in their academic and personal lives. Given the historical effectiveness of Mandala Art Therapy in addressing psychological challenges, it is essential to investigate its potential as an intervention to mitigate the mental health issues faced by university students.

Significance of the Study

This study holds substantial significance due to its potential to contribute to the well-being of university students, a demographic vulnerable to mental health issues during a pivotal life transition. Understanding the effectiveness of Mandala Art Therapy as an intervention for alleviating depression, anxiety, and stress, while bolstering resilience, has practical implications for both mental health practitioners and educators. It offers a promising approach to support students in managing their emotional and psychological challenges effectively, ultimately leading to improved academic performance and a higher quality of life. Furthermore, the study aligns with broader societal goals of addressing mental health concerns, reducing the societal cost of mental health disorders, and fostering a more mentally resilient young adult population.

Objective of Current Research

The primary objective of the current research is to empirically assess the impact of Mandala Art Therapy on depression, anxiety, stress, and resilience among university students during the crucial phase of transitioning from adolescence to adulthood. Specifically, the research aims to:

- Determine the effectiveness of Mandala Art Therapy in reducing levels of depression, anxiety, and stress among university students.
- Investigate how Mandala Art Therapy enhances the resilience of university students facing mental health challenges.
- Contribute to a better understanding of the potential of this ancient therapeutic approach as an intervention to address mental health issues among young adults.
- Provide insights and practical recommendations for mental health practitioners and educators on the use of Mandala Art Therapy in supporting the psychological well-being of university students.

Hypothesis

- H0-There are no significant differences noted amongst all 4 variables
- H1-There is a significant difference noted in depression
- H2-There is a significant difference noted in anxiety
- H3-There is a significant difference noted in stress
- H4-There is a significant difference noted in resilience

METHODOLOGY

Sample

This study follows a quasi-experimental design and employs convenience sampling, a type of non-purposive sampling. The sample size consists of 30 young adults aged 19 to 24 who are currently enrolled in university. The research will include participants undergoing intervention in the form of Mandala Art Therapy through two sessions per week during this one month. This approach allows for a comprehensive examination of the impact of Mandala Art Therapy on the mental well-being of university students within this specific

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age range, providing valuable insights into the potential benefits of this intervention for this demographic.

Research Design

The research design for this study is a quasi-experimental design. Quasi-experimental designs are characterized by the manipulation of an independent variable (Mandala Art Therapy intervention) and the measurement of its impact on dependent variables (depression, anxiety, stress, and resilience) while lacking the random assignment typically seen in true experimental designs. In this study, the intervention is applied to a group of university students within a specific age range, and changes in the dependent variables are measured before and after the intervention.

Variables

- **Independent Variable:**

- **Mandala Art Therapy Intervention:** This is the variable that is manipulated in the study. It involves the provision of Mandala Art Therapy to the participants, and the impact of this intervention is assessed on the dependent variables.

- **Dependent Variables:**

- **Depression:** The extent of emotional and psychological distress experienced by the participants is measured using the Depression subscale of the DASS-21. Higher scores on this scale indicate a higher level of depressive symptoms.
- **Anxiety:** The degree of nervousness and unease experienced by participants is assessed through the Anxiety subscale of the DASS-21. Higher scores on this scale indicate a greater level of anxious symptoms.
- **Stress:** The level of psychological and emotional tension experienced by participants is evaluated using the Stress subscale of the DASS-21. Higher scores on this scale signify a higher degree of stress.
- **Resilience:** Resilience is measured using the Brief Resilience Scale (BRS), which assesses participants' perceived ability to adapt and bounce back from adversity and stress. Higher scores on this scale indicate higher levels of resilience, representing psychological strength and flexibility.

Tools

Self-Reporting Questionnaire (SRQ)-The Self-Reporting Questionnaire (SRQ) was developed by the WHO as an instrument to screen for mental disorders, including depression, anxiety-related disorders, and somatoform disorders.

The validity evidence collection for SRQ-20 has been carried out in several countries and has even attempted to discover the probable factors that underlying SRQ-20(Chen et al., 2009; Kootbodien et al., 2015; Netsereab et al., 2018; Scholte et al., 2011; vander Westhuizen et al., 2015). The validity evidence of the SRQ-20 was collected based on relations to other variables and as a screening instrument.

Scoring and Interpretation-Scored as 0 (symptoms absent) or 1 (symptoms present). Score range 0-20; Scores >10 are classified as mental distress. Responses are yes or no.

DASS-21- The DASS-21 is the short form of the DASS-42, a self-report scale designed to measure the negative emotional states of depression, anxiety, and stress. This scale is suitable for clinical settings to assist in diagnosis and outcome monitoring, as well as non-

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clinical settings as a mental health screener. The DASS is based on a dimensional rather than a categorical conception of psychological disorders, and scores emphasize the degree to which someone is experiencing symptoms rather than having diagnostic cut-off points.

Validity and Reliability

The DASS-21 was initially developed using a sample of responses from 504 students, taken from a larger sample of 950 first-year university students. The items were subsequently checked for validity against outpatient groups including patients suffering from anxiety, depression, and other mental disorders. The DASS-21 has been extensively normed, with data used for interpretive purposes based on a sample of 1794 non-clinical adults (Henry & Crawford, 2005). Consistent with the DASS42, the DASS-21 has internal consistency and concurrent validity in acceptable to excellent ranges (Antony et al., 1998).

Scoring and Interpretation

Scores are presented as a total score and a score for the three subscales. For each of the three subscales percentiles and computed based on a community sample (Henry & Crawford, 2005). In addition, scores for each subscale are categorized into five severity ranges: normal, mild, moderate, severe, and extremely severe. The severity labels are used to describe the full 9 range of scores in the population, so 'mild' for example means that the person is above the population mean but probably still below the typical severity of someone seeking help (i.e., it does not mean a mild level of disorder).

Each of the three DASS-21 scales contains 7 items.

- Depression: dysphoria, hopelessness, devaluation of life, self-deprecation, lack of interest / involvement, anhedonia, and inertia. (Items 3, 5, 10, 13, 16, 17, 21)
- Anxiety: autonomic arousal, skeletal muscle effects, situational anxiety, and subjective experience of anxious affect. (Items 2, 4, 7, 9, 15, 19, 20)
- Stress: levels of chronic nonspecific arousal, difficulty relaxing, nervous arousal, and being easily upset / agitated, irritable / over-reactive and impatient. (Items 1, 6, 8, 11, 12, 14, 18).

Brief Resilience Scale (BRS)- The Brief Resilience Scale was created to assess the perceived ability to bounce back or recover from stress. The scale was developed to assess a unitary construct of resilience, including both positively and negatively worded items. The possible score range on the BRS is from 1 (low resilience) to 5 (high resilience). Note that items 1, 3, and 5 are positively worded, and items 2, 4, and 6 are negatively worded. The BRS is scored by reverse coding items 2, 4, and 6 and finding the mean of the six items. For questions 1, 3, and 5:

1. Strongly Disagree, 2. Disagree, 3. Neutral, 4. Agree, 5. Strongly Agree

• For questions 2, 4, and 6:

5. Strongly Disagree, 4. Disagree, 3. Neutral, 2. Agree, 1. Strongly Agree

• Add the responses varying from 1-5 for all six items giving a range from 6-30.

Divide the total sum by the total number of questions answered.

BRS score Interpretation

1.00-2.99 Low resilience

3.00-4.30 Normal resilience

BRS score Interpretation

4.31-5.00 High resilience

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Various psychometric evaluation tools were used to evaluate the internal consistency, criterion validity, factorial validity, and construct validity of these resilience scales. The results showed that both scales had good criterion validity, with well-established measures of well-being, optimism, self-esteem, self-efficacy, and mental health, as suggested in the resilience literature.

Procedure

The primary goal of this research is to investigate the effectiveness of Mandala Art Therapy as an intervention for addressing depression, anxiety, stress, and resilience among university students aged 19-24. This quantitative study adopts a quasi-experimental design, employing non-purposive sampling with a convenience sampling method for participant recruitment. The research begins with eligibility criteria, where university students within the specified age range are sought, and those without pre-existing mental illnesses who willingly agree to participate are considered. To screen for psychological conditions, all potential participants complete the SRQ-20, and only those who meet the criteria proceed further. The measurement of depression, anxiety, stress, and resilience is conducted using the DASS-21 and BRS scales, with pre-test scores documented. The individuals with high pre-test scores in the DASS-21 (indicating elevated levels of depression, anxiety, and stress) and high scores in the BRS (indicating lower resilience levels). These individuals receive the Mandala Art Therapy intervention, engaging in two sessions per week over a period of one month, using pre-printed Mandala paper, colors, and pens to create Mandala art. Following the intervention, all participants, undergo a post-test assessment utilizing the same scales from the pre-test. The collected data is then subjected to statistical analysis, such as the Wilcoxon Signed Rank Test, and Paired T Test to assess the impact of the Mandala Art Therapy intervention. The results of this research will contribute to our understanding of whether Mandala Art Therapy can effectively alleviate depression, anxiety, and stress while enhancing resilience among university students. The implications of these findings extend to the realm of mental health support in educational settings, potentially offering a valuable tool for addressing the psychological well-being of young adults undergoing a critical life transition.

Data Analysis

This study is structured to assess the impact of Mandala Art Therapy as an intervention for university students aged 19-24, targeting depression, anxiety, stress, and resilience. The pre-test data analysis begins with the screening of psychological conditions using the SRQ-20, ensuring eligible participants proceed to the subsequent analysis. Pre-test measurements of depression, anxiety, and stress are conducted through the DASS-21, calculating mean scores for each subscale to establish a baseline understanding. The assessment of resilience is similarly analyzed using the BRS scale to determine participants' initial resilience levels. In the post-test phase, a comparative analysis evaluates the changes in depression, anxiety, stress, and resilience following the Mandala Art Therapy intervention. Statistical tests, such as the Wilcoxon Signed Rank Test, are applied to determine the significance of the changes within the experimental group, which received the intervention. This comprehensive data analysis aims to provide empirical evidence of the intervention's effectiveness in enhancing the mental well-being of university students during a crucial life transition.

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Ethical considerations

In the context of the study assessing the effectiveness of Mandala Art Therapy as an intervention for university students' mental well-being, several ethical considerations were taken:

- **Informed Consent:** All participants provided informed and voluntary consent to participate in the study. They were provided with comprehensive information about the study's objectives, procedures, potential risks, and benefits.
- **Participant Confidentiality:** Protecting the confidentiality and privacy of participants is crucial. It was ensured that participants' personal information and responses are kept confidential and are not disclosed to anyone outside the research team.
- **Avoidance of Harm:** The Mandala Art Therapy intervention was administered in a supportive and non-coercive manner.
- **Debriefing:** After the study, I provided participants with a debriefing session, during which I shared the study's results and addressed any questions or concerns. This ensured that participants left the study with a full understanding of their involvement.
- **Ethical Review:** I ensured that the research protocol was reviewed and approved by an institutional ethics committee to guarantee that the study complied with ethical standards and principles. I addressed any ethical concerns raised by the committee before the study commenced.

RESULTS AND DISCUSSION

Results

The analysis conducted on two sets of paired samples, denoted as Pre-D and Post D, and Pre-A and Post A, reveals significant differences before and after an intervention. Paired samples t-tests indicate that both Pre-D and Pre-A exhibit substantial increases in their respective mean scores post-intervention, with statistically significant t-statistics (7.08 and 9.45, respectively) and low p-values (< 0.001). The effect sizes, measured by Cohen's *d*, are notably large for both comparisons (1.27 for Pre-D and 1.70 for Pre-A). Importantly, normality tests using Shapiro-Wilk suggest no significant violations of the assumption of normality. Descriptive statistics provide additional insights, showing the central tendency and variability in each group. In summary, the intervention appears to have a substantial and statistically significant impact on the measured variables, with no apparent issues related to the normality assumption.

The paired samples t-tests and Wilcoxon signed-rank tests were employed to assess the impact of an intervention on two sets of paired samples, denoted as Pre-S and Post S, and Pre-R and Post R. For Pre-S and Post S, the results show a significant improvement, as indicated by a high t-statistic (10.39) and a low p-value (< 0.001). The effect size, Cohen's *d*, is substantial at 1.819, highlighting the practical significance of the observed changes. Additionally, a Wilcoxon *W* test was conducted, supporting the significant improvement with a *W* value of 405.0. The rank biserial correlation further emphasizes the strength of the relationship (0.995). In contrast, for Pre-R and Post R, a significant decrease is noted, with a t-statistic of -2.83, p-value of 0.008, and a negative Cohen's *d* (-0.509). The Wilcoxon *W* test (*W* = 11.0) and rank biserial correlation (-0.758) corroborate these findings. However, normality tests suggest potential violations for both sets of comparisons. Descriptive statistics provide insight into the central tendency and variability within each group. These

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findings underscore the intervention's effectiveness on Pre-S, while caution should be exercised in interpreting the results for Pre R due to potential normality issues.

DISCUSSION

The results of the paired samples t-tests conducted on Pre D and Post D, as well as Pre A and Post A, indicate a statistically significant improvement following an intervention. The considerable effect sizes (Cohen's *d*) for both Pre D (1.27) and Pre A (1.70) underscore the practical significance of these changes. Importantly, the Shapiro-Wilk normality tests reveal no substantial deviations, supporting the reliability of the t-test results. The descriptive statistics offer a comprehensive overview of the data distribution within each group. These findings suggest that the intervention had a notable and consistent impact, warranting further exploration of the underlying mechanisms and potential implications. However, it is crucial to acknowledge any limitations in study design and generalizability when interpreting these results.

The results of the paired samples t-tests and Wilcoxon signed-rank tests reveal compelling insights into the impact of the intervention on two distinct sets of paired samples—Pre S and Post S, as well as Pre R and Post R. Notably, the intervention demonstrated a remarkable positive effect on Pre S and Post S, with a substantial increase in the mean score supported by a high t-statistic (10.39) and a significantly low p-value (< 0.001). The effect size, Cohen's *d*, further accentuates the practical significance of this improvement (1.819), suggesting a robust and meaningful change. The consistency of these findings is reinforced by the Wilcoxon *W* test ($W = 405.0$) and the rank biserial correlation (0.995), both indicating a strong relationship between the pre and post measurements. In contrast, for Pre R and Post R, a significant decrease is evident, with a negative t-statistic (-2.83), a modest Cohen's *d* (-0.509), and supporting evidence from the Wilcoxon *W* test ($W = 11.0$) and rank biserial correlation (-0.758). However, it's essential to approach the interpretation of Pre R cautiously due to potential violations of normality, as indicated by the Shapiro-Wilk tests. Despite this caveat, the results collectively suggest a meaningful and varied impact of the intervention, underscoring the importance of considering both statistical significance and effect sizes when evaluating program efficacy. Future research could further explore the underlying factors contributing to these changes and address potential normality issues in the analytical approach.

SUMMARY AND CONCLUSION

Major Findings

The study's major findings indicate a significant positive impact of the intervention on the paired samples Pre S and Post S, characterized by a substantial increase in mean scores, supported by a high t-statistic (10.39) and a low p-value (< 0.001). The effect size, Cohen's *d* (1.819), emphasizes the practical significance of the observed improvements. The Wilcoxon *W* test ($W = 405.0$) and the rank biserial correlation (0.995) further validate the strength and consistency of this positive relationship. Conversely, for Pre R and Post R, a significant decrease is observed, supported by a negative t-statistic (-2.83) and a modest Cohen's *d* (-0.509), with complementary evidence from the Wilcoxon *W* test ($W = 11.0$) and rank biserial correlation (-0.758). However, caution is advised in interpreting the results for Pre R due to potential violations of normality.

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Limitations

1. The study's sample size may be limited in generalizability, and a larger and more diverse sample could provide further insights.
2. The study did not investigate the underlying causes of Resilience, which limits the ability to interpret the results fully.
3. The study assumes that the effects are solely due to the Mandala Art Therapy intervention, but other external factors may have contributed to the observed changes.

Implications

The study's implications highlight the effectiveness of the intervention in positively influencing the outcomes related to Pre S. These findings have practical significance, as reflected by the substantial effect size and consistent support from both parametric and non-parametric tests. The observed improvements may have implications for the design and implementation of similar interventions, especially in contexts where Pre S-like measures are relevant. On the other hand, the decrease observed in Pre R suggests a potential area for further investigation. The identification of normality issues underscores the importance of robust statistical assumptions and raises awareness about the potential limitations in interpreting certain findings.

Future Scope

The study opens avenues for future research in several areas. Firstly, further exploration into the specific components of the intervention that led to the positive outcomes in Pre S could provide insights for refining and optimizing intervention strategies. Additionally, addressing potential normality issues in statistical analyses, particularly for measures like Pre R, could enhance the validity of findings. Long-term follow-up studies could assess the sustainability of the observed changes. Moreover, examining individual differences in response to the intervention may contribute to tailoring interventions for diverse populations. Finally, a comparative analysis with other interventions or control groups could provide a broader understanding of the intervention's unique contributions. Overall, these findings offer a foundation for deeper investigations, emphasizing the need for a nuanced and context-specific approach in future research endeavors.

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Acknowledgment

The author(s) appreciates all those who participated in the study and helped to facilitate the research process.

Conflict of Interest

The author(s) declared no conflict of interest.

How to cite this article: Sneha, T.M. & Lucas, P.J. (2024). Mandala Art Therapy as an Intervention for Depression, Anxiety, Stress and Resilience among University Students. *International Journal of Indian Psychology*, 12(1), 699-710. DIP:18.01.066.20241201, DOI:10.25215/1201.066

Table 1. (Sociodemographic Table)

Variable	Count	Mean	Median	Min	Max
Age					
Gender					
Female	19	21.69	22	19	23
Male	12	22.36	24	20	24
Nationality					
Indian	31				
Educational Qualification					
Undergraduate	10	22.1	23	19	24
Postgraduate	21	22.06	22	19	24

Mandala Art Therapy as an Intervention for Depression, Anxiety, Stress and Resilience among University Students

Table 2. Paired Sample T-test (Depression and Anxiety)

Paired Samples T-Test

			statistic	df	p	Mean difference	SE difference		Effect Size
Pre D	Post D	Student's t	7.08	30.0	< .001	14.8	2.09	Cohen's d	1.27
Pre A	Post A	Student's t	9.45	30.0	< .001	17.4	1.84	Cohen's d	1.70

Normality Test (Shapiro-Wilk)

			W	p
Pre D	-	Post D	0.959	0.276
Pre A	-	Post A	0.946	0.124

Note. A low p-value suggests a violation of the assumption of normality

Descriptives

	N	Mean	Median	SD	SE
Pre D	31	21.55	24	11.91	2.139
Post D	31	6.77	8	3.33	0.599
Pre A	31	24.00	30	11.62	2.086
Post A	31	6.58	8	3.51	0.630

Table 3. Paired Sample T-test (Stress and Resilience)

Paired Samples T-Test

			Statistic	df	p	Mean difference	SE difference		Effect Size
Pre S	Post S	Student's t	10.39	30.0	< .001	18.903	1.819	Cohen's d	1.866
		Wilcoxon W	405.0 ^a		< .001	22.00	1.819	Rank biserial correlation	0.995
Pre R	Post R	Student's t	-2.83	30.0	0.008	-0.387	0.137	Cohen's d	-0.509
		Wilcoxon W	11.0 ^b		0.012	-1.00	0.137	Rank biserial correlation	-0.758

^a 3 pair(s) of values were tied

^b 18 pair(s) of values were tied

Normality Test (Shapiro-Wilk)

			W	p
Pre S	-	Post S	0.885	0.003
Pre R	-	Post R	0.808	< .001

Note. A low p-value suggests a violation of the assumption of normality

Descriptives

	N	Mean	Median	SD	SE
Pre S	31	26.45	30	11.072	1.989
Post S	31	7.55	8	3.491	0.627
Pre R	31	2.35	3	0.915	0.164
Post R	31	2.74	3	0.815	0.146