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ORIGINAL

Enhancing Mental Health Awareness in Adolescent Girls through the Application of Complementary Therapies: A Quasi-Experimental Study

Mejorando la Conciencia sobre la Salud Mental en Adolescentes mediante la Aplicación de Terapias Complementarias: Un Estudio Cuasiexperimental

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ABSTRACT

Introduction: mental health awareness is an important concept for adolescent girls. In general, adolescent girls have a higher prevalence of anxiety and depression than boys. The problem-solving method used in this study provided interventions through complementary therapies such as journaling, yoga pranayama, and self-hypnosis. Therefore, this study aimed to determine the application of Journaling, Yoga Pranayama, and Self-hypnosis in increasing mental health awareness in adolescent girls within Badung Regency, Bali.
Method: a quasi-experimental method was used to evaluate the application of journaling, yoga pranayama, and self-hypnosis in increasing mental health awareness. The respondents were adolescent girls divided into three different groups, given Journaling, Yoga Pranayama, and Self-Hypnosis methods, respectively. Before and after the intervention, the respondents were tested using the Depression Anxiety and Stress Scales Youth version (DASS-Y) to determine anxiety, stress, and depression.
Results: the Wilcoxon test showed significant reductions across all interventions: journaling reduced depression ($p = 0,005$), anxiety ($p = 0,008$), and stress ($p = 0,018$); yoga pranayama reduced depression ($p = 0,022$), anxiety ($p = 0,018$), and stress ($p = 0,048$); and self-hypnosis reduced depression ($p = 0,001$), anxiety ($p = 0,001$), and stress ($p = 0,003$). The Kruskal–Wallis test revealed no significant differences between the three interventions for depression ($p = 0,417$), anxiety ($p = 0,539$), or stress ($p = 0,109$).
Conclusion: journaling, yoga pranayama, and self-hypnosis interventions can reduce anxiety, stress, and depression in adolescent girls.

Keywords: Journaling; Yoga Pranayama; Self-Hypnosis; Mental Health Awareness; Adolescent Girls.

RESUMEN

Introducción: la conciencia sobre la salud mental es un concepto importante para los adolescentes. En general, los adolescentes presentan una mayor prevalencia de ansiedad y depresión que las adolescentes. El método de resolución de problemas utilizado en este estudio proporcionó intervenciones mediante terapias complementarias como el diario personal (journaling), el yoga pranayama y la autohipnosis. Por lo tanto, este estudio tuvo como objetivo determinar la aplicación del diario personal, el yoga pranayama y la autohipnosis para aumentar la conciencia sobre la salud mental en adolescentes del distrito de Badung, Bali.
Método: se utilizó un método cuasiexperimental para evaluar la aplicación del diario personal, el yoga pranayama y la autohipnosis en el aumento de la conciencia sobre la salud mental. Los participantes fueron adolescentes, divididos en tres grupos diferentes, a quienes se les aplicaron respectivamente los métodos de

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diario personal, yoga pranayama y autohipnosis. Antes y después de la intervención, los participantes fueron evaluados mediante la Depression Anxiety and Stress Scales - Youth version (DASS-Y) para determinar los niveles de ansiedad, estrés y depresión.
Resultados: la prueba de Wilcoxon mostró reducciones significativas en todas las intervenciones: el diario personal redujo la depresión (p = 0,005), la ansiedad (p = 0,008) y el estrés (p = 0,018); el yoga pranayama redujo la depresión (p = 0,022), la ansiedad (p = 0,018) y el estrés (p = 0,048); y la autohipnosis redujo la depresión (p = 0,001), la ansiedad (p = 0,001) y el estrés (p = 0,003). La prueba de Kruskal–Wallis no reveló diferencias significativas entre las tres intervenciones en depresión (p = 0,417), ansiedad (p = 0,539) o estrés (p = 0,109).
Conclusión: las intervenciones de diario personal, yoga pranayama y autohipnosis pueden reducir la ansiedad, el estrés y la depresión en adolescentes.

Palabras clave: Diario Personal; Yoga Pranayama; Autohipnosis; Conciencia sobre la Salud Mental; Adolescentes.

INTRODUCTION

Adolescence is a critical period for physical and mental development in humans. Globally, one in seven children aged 10-19 years experiences mental disorders, such as depression, anxiety, and behavioral disorders.[1] More than 19 million people aged > 15 years or older experience mental and emotional disorders, with over 12 million experiencing depression.[2] A comprehensive study analyzing data from 566,829 adolescents across 73 countries found that girls consistently reported worse mental health outcomes than boys. The gender gap is most pronounced in measures of psychological distress and life satisfaction.[3] The most common mental health problem is anxiety, reaching 25,4 % and 28,2 % in adolescent boys and girls, respectively. The prevalence of depression in adolescent girls (6,7 %) was higher than that in boys (4,0 %).[4]

Mental health management in Indonesia faces various problems, such as the limited and uneven availability of personnel and service facilities, inadequate service quality, and limited public knowledge of mental health services.[5,6] Transforming the mental health system is a necessity that can be achieved by prioritizing community participation and awareness of cognitive, emotional, and psychological health.[7]

Adolescent girls need to recognize mental health issues early and treat associated disorders through complementary therapies such as yoga, journaling therapy, and self-hypnosis. These three therapies were selected because they are easy and effective to implement without needing help from others. Pranayama Yoga is a breath management technique performed using the diaphragm muscles. It increases relaxation to control emotions, the mind, and the body.[8] Journaling is a form of therapy that focuses on writing a journal about oneself and is widely used to manage mental disorders.[9] Self-hypnosis is a persuasive communication method used to reduce anxiety and create a relaxing effect.[10,11]

A preliminary study randomly distributed the DASS 42 questionnaire to 20 adolescent girls aged 13-15 in Badung Regency in February 2024.[12] The results showed that 18 adolescent girls experienced anxiety ranging from mild to very severe, 6 had mild to severe stress, and 8 had mild to moderate depression. Moreover, the interview results showed that adolescent girls had never received information about mental health or therapy to treat mental health disorders.

This research was conducted based on the findings of the literature review, which showed that adolescent girls have a higher risk of mental health disorders, especially anxiety and depression. With limited mental health services available, there is a need for self-accessible interventions that are effective in increasing mental health awareness. From a conceptual framework perspective, this study argues that increasing mental health awareness can be implemented through several complementary therapies, including journaling therapy, yoga pranayama, and self-hypnosis, which are supported by the results of previous studies. A qualitative study examined the effectiveness of journaling therapy in increasing self-compassion among adolescent orphans. The results showed that by recording their experiences, feelings, and personal reflections, adolescents can better understand themselves and reduce their negative feelings.[13] Another study mentioned that writing gratitude can be an effective way to help individuals positively change their circumstances and reduce stress and negative moods.[14] According to a study, the psychological well-being of adolescent female pupils significantly improved by practicing yoga. Yoga and its techniques have the potential to develop positive mental health, self-awareness, and mental relaxation. Another study showed that an online yoga program effectively increased adolescent girls' positive emotions and mental well-being.[15] The body, mind, and spirit are all coordinated in yoga, which can help avoid and overcome stress and dysmenorrhea by promoting relaxation, lowering tension, and producing endorphins.[16,17,18,19] One study reported that self-hypnosis training in adolescent girls significantly reduced psychological anxiety levels. This technique helps adolescents manage stress and increase self-control when facing emotional challenges.[20] Another study found that therapeutic hypnosis helps teenagers manage their physical and emotional well-being by reducing stress, boosting self-esteem and competence, and giving

them a sense of control. Certain issues, including enuresis, headaches, stomach discomfort, procedure pain/anxiety, and adjustment responses to stress, may be best treated with hypnosis.[10] These three therapies work through different mechanisms, yet help adolescent girls cope with anxiety, stress, and depression. Journaling therapy helps individuals express and process their emotions, increases self-understanding, and provides a space for reflection to cope with emotional distress. Yoga pranayama regulates breathing, reduces physical and mental tension, and improves emotional balance. Self-hypnosis influences self-control, lowers anxiety, and promotes relaxation. Through these three therapies, a sustainable increase in mental health awareness among adolescent girls is expected. Thus, this study is relevant in contributing to a new approach in complementary mental health treatment.

This study aimed to evaluate the effectiveness of complementary therapies, namely journaling therapy, yoga pranayama, and self-hypnosis, by comparing each intervention in overcoming mental health disorders, namely depression, anxiety, and stress, in adolescent girls. This study hypothesizes that complementary therapies, namely journaling therapy, yoga pranayama, and self-hypnosis, increase adolescent girls' awareness of mental health.

METHOD

Study Design

This study was conducted in October-November 2024 in three junior high schools: SMP N 2 Abiansemal, SMP N 3 Abiansemal, and SMP N 5 Abiansemal. This study used a quasi-experimental method to evaluate the application of journaling, yoga pranayama, and self-hypnosis to increase mental health awareness.

The sample determination was adjusted according to the inclusion and exclusion criteria. The respondents were adolescent girls aged 12-15, divided into three groups. The first, second, and third groups received journaling, yoga pranayama, and self-hypnosis. The respondents were tested before and after being given the intervention using the Depression Anxiety and Stress Scales Youth version (DASS-Y) questionnaire to determine depression, anxiety, and stress.

Sample and Setting

Respondents were determined by non-probability sampling, namely purposive sampling, with inclusion criteria, including adolescent girls who experienced mental health problems (anxiety, stress, and depression), and were analyzed using the DASS-Y. In contrast, the exclusion criteria included adolescent girls who refused to respond and respondents who were not involved in the study until the end—sample measurement using Slovin's formula. Sixty adolescent girls who met the inclusion criteria were divided into three groups. Each group consisted of 20 members who implemented one type of intervention, namely treatment 1 (journaling therapy), treatment 2 (Pranayama yoga therapy), and treatment 3 (self-hypnosis therapy), carried out for three consecutive days using the therapy guide provided. Furthermore, the effectiveness of the complementary therapy guide in increasing mental health awareness was evaluated to create an evaluation material. The variables studied focused on mental health problems (normal, depression, anxiety, and stress) using the DASS-Y questionnaire before and after implementing the complementary therapy guidelines.

Instruments

The Depression Anxiety Stress Scales-Youth version (DASS-Y) measures psychological discomfort and negative emotional states of stress, anxiety, and depression in youth aged 7 to 18. In 1995, Lovibond and Lovibond created the DASS-Y.[21] The DASS-Y consists of twenty-one statements, with seven statements each, to assess depression, anxiety, and stress. This questionnaire uses a Likert scale format with four answer options; each question is given a score of 0 to 3, then the scores in each category are summed, and normal, mild, moderate, severe, and very severe are interpreted.

Intervention Procedure

Table 1. Description of Activities in Each Intervention

Session	Group 1 – Journaling Therapy (SMPN 2 Abiansemal)	Group 2 – Self-Hypnosis Therapy (SMPN 3 Abiansemal)	Group 3 – Pranayama Yoga Therapy (SMPN 5 Abiansemal)
1	Introduction of the researcher and study purpose: The researcher introduces herself and explains the aim of the study, the intervention flow, and the participant roles. Implementation setting: Conducted in a quiet and comfortable classroom to ensure focus. Supervision: The Researcher and trained team supervised each session. Guideline: Intervention followed a structured video-based guide developed by the researcher with certified therapists.		
2	Sample selection and Pre-Test using DASS-Y: Participants were selected via purposive sampling. Pre-test to assess mental health conditions.		

3	Journaling Session 1: Participants are guided to reflect on the following prompts: How are you feeling today? What made you happy/sad/laugh today? What are you grateful for today? What was your challenge or achievement today? What did you accomplish today/this week/this month/this year? Participants write in the diary book provided by the researcher.	Self-Hypnosis Session 1: Relaxation and visualization techniques following the video instruction.	Pranayama Session 1: Practice includes a combination of Nadi Shodhana and Bhramari breathing techniques, guided by an instructional video.
4	Journaling Session 2: Continued reflective journaling with optional prompts and sharing in a group. Participants may revisit or expand upon previous reflections. Participants write in the diary book provided by the researcher.	Self-Hypnosis Session 2: Deeper hypnosis with positive affirmations following the video guide.	Pranayama Session 2: Practice includes a combination of Nadi Shodhana and Bhramari breathing techniques, guided by an instructional video.
5	Journaling Session 3 and Post-Test: Final reflective writing on self-appreciation, guided with prompts or free writing. Participants write in the diary book provided by the researcher. Post-test using DASS-Y was administered afterward.	Self-Hypnosis Session 3 and Post-Test: Final guided session and post-test with reflection.	Pranayama Session 3 and Post-Test: Practice includes a combination of Nadi Shodhana and Bhramari breathing techniques, guided by an instructional video. DASS-Y post-test administered.

Dysphoria, hopelessness, assessed life, self-disrespect, lack of participation or interest, anhedonia, and lethargy were all rated on the depression scale. Autonomic arousal, skeletal muscle effects, situational anxiety, and subjective perception of anxious affect were evaluated using the anxiety scale. The stress scale is susceptible to long-term general excitatory levels.

The stress scale assesses difficulty in relaxing, nervous excitability, irritability or restlessness, over-reactivity, and impatience. The interpretation of the DASS-Y questionnaire is easily applicable to the population and does not require specialized training.

Data Collection

Each junior high school's respondents received a different intervention: SMP N 2 Abiansemal received journaling therapy, SMP N 3 Abiansemal received self-hypnosis therapy, and SMP N 5 Abiansemal received Yoga Pranayama therapy. This study was conducted for three consecutive days in each junior high school, with details of the first day of the pre-test using the DASS-Y questionnaire, followed by the first intervention. On the second day, only intervention was given, and on the third day, the third intervention was given, and a post-test was conducted using the same DASS-Y questionnaire as the pre-test. Each intervention was conducted for 20 minutes with guidance. After the data was collected, the researcher tabulated and analyzed the data. The intervention was conducted by certified personnel who had undergone training per the intervention.

Data Analysis

Data analysis was carried out using descriptive statistical tests to determine the characteristics of respondents, as well as pretest and posttest results. The data was tested for normality using the Kolmogorov-Smirnov test, because the data was> 50, with a p-value of 0,000, which means the data is not normally distributed. Therefore, the comparative test used the non-parametric Wilcoxon signed-rank test to compare each group before and after the intervention, and the Kruskal-Wallis test to compare the journaling, yoga pranayama, and self-hypnosis interventions using SPSS.

Ethical Considerations

All protocols were approved by the Research Ethics Commission of STIKES Bina Usada Bali (approval number 232/EA/KEPK-BUB-2024). In this study, the researcher has considered the seven points of ethical feasibility standards: social/clinical value. This research is relevant to health problems and produces important information in increasing mental health awareness, which the research will generate. Researchers maintain the confidentiality of respondents by using codes (initials in the results of data tabulation or in informed consent), and finally, informed Consent. Respondents sign informed consent after receiving an explanation of the research and are willing to become respondents, with the involvement of parents or guardians, because respondents are <17 years old.

RESULTS

The results in table 2 show data on the characteristics of respondents, the influence of Journaling, Yoga Pranayama, and Self-Hypnosis intervention on depression, anxiety, and stress in adolescent girls. The mean age of the adolescent girls was 13,63 ± 0,712. The mean pre-test and post-test depression values were 3,38 ± 1,329 and 2,15 ± 1,325, respectively. The pre-test result for anxiety was 4,02 ± 1,228. Furthermore, the mean post-test result for anxiety was 2,77 ± 1,466, and the pre and post-test results for stress were 2,62±1,451 and 1,62 ± 1,106, respectively.

Table 2. Respondent characteristics

Characteristics	Frequency	Percent (%)	Mean	SD
Age			13,63	0,712
13 years old	30	44,8		
14 years old	22	32,8		
15 years old	8	11,9		
Order of Children			5,80	5,641
1-2	45	75		
2-4	13	21,67		
>4	2	3,33		
Number of siblings			2,48	1,081
1-2	26	43,33		
2-4	30	50		
>4	4	6,67		
Depression Pre-test Score			3,38	1,329
Normal	6	9,0		
Mild	11	16,4		
Moderate	13	19,4		
Severe	14	20,9		
Extremely Severe	16	23,9		
Depression Post-test Score			2,15	1,325
Normal	26	38,8		
Mild	16	23,9		
Moderate	6	9,0		
Severe	7	10,4		
Extremely Severe	5	7,5		
Anxiety Post-test Score			4,02	1,228
Normal	4	6,0		
Mild	2	3,0		
Moderate	14	20,9		
Severe	9	13,4		
Extremely Severe	31	46,3		
Anxiety Post-test Score			2,77	1,466
Normal	17	25,4		
Mild	9	13,4		
Moderate	17	25,4		
Severe	5	7,5		
Extremely Severe	12	17,9		
Stress Pre-test Score			2,62	1,451
Normal	20	29,9		
Mild	9	13,4		
Moderate	14	20,9		
Severe	8	11,9		
Extremely Severe	9	13,4		

Stress Post-test Score			1,62	1,106
Normal	43	64,2		
Mild	5	7,5		
Moderate	5	7,5		
Severe	6	9,0		
Extremely Severe	1	1,5		

Table 3 shows that the analysis using the Wilcoxon signed-rank test demonstrated that journaling therapy, Pranayama Yoga, and self-hypnosis each significantly reduced levels of depression, anxiety, and stress among adolescent girls. Journaling therapy resulted in a decrease in depression from 3,65 ± 1,461 (severe) to 2,55 ± 1,504 (moderate), anxiety from 4,20 ± 1,240 (severe) to 3,10 ± 1,714 (moderate), and stress from 3,05 ± 1,638 (moderate) to 2,05 ± 1,356 (mild), with p-values of 0,005, 0,008, and 0,018, respectively. Pranayama Yoga therapy reduced depression from 3,20 ± 1,436 (moderate) to 2,00 ± 1,298 (mild), anxiety from 3,75 ± 1,372 (severe) to 2,55 ± 1,432 (moderate), and stress from 2,30 ± 1,372 (mild) to 1,45 ± 0,999 (normal), with p-values of 0,022, 0,018, and 0,048. Similarly, self-hypnosis therapy led to a reduction in depression from 3,30 ± 1,081 (moderate) to 1,90 ± 1,119 (mild), anxiety from 4,10 ± 1,071 (severe) to 2,65 ± 1,226 (moderate), and stress from 2,50 ± 1,277 (moderate) to 1,35 ± 0,813 (normal), with p-values of 0,001, 0,001, and 0,003, respectively. These findings suggest that all three therapeutic interventions are effective in reducing psychological distress among adolescent girls.

Table 3. Analysis of differences in depression, anxiety, and stress before and after being given journaling, yoga pranayama, and self-hypnosis intervention to adolescent girls

Intervention	Interpretation					Mean±std	Wilcoxon signed-rank test
	Normal	Mild	Moderate	Severe	Extremely severe		
Journaling							
Pre-test Depression	2	4	1	5	8	3,65±1,461	0,005
Post-test Depression	8	2	3	5	2	2,55±1,504	
Pre-test Anxiety	1	1	4	1	13	4,20±1,240	0,008
Post-test Anxiety	6	2	3	2	7	3,10±1,714	
Pre-test Stress	6	1	5	2	6	3,05±1,638	0,018
Post-test Stress	11	2	3	3	1	2,05±1,356	
Yoga Pranayama							
Pre-test Depression	3	4	4	4	5	3,20±1,436	0,022
Post-test Depression	9	7	1	1	2	2,00±1,298	
Pre-test Anxiety	2	1	6	2	9	3,75±1,372	0,018
Post-test Anxiety	7	2	7	1	3	2,55±1,432	
Pre-test Stress	9	2	4	4	1	2,30±1,372	0,048
Post-test Stress	16	1	1	2	0	1,45±0,999	
Self-Hypnosis							
Pre-test Depression	1	3	8	5	3	3,30±1,081	0,001
Post-test Depression	9	7	2	1	1	1,90±1,119	
Pre-test Anxiety	1		4	6	9	4,10±1,071	0,001
Post-test Anxiety	4	5	7	2	2	2,65±1,226	
Pre-test Stress	5	6	5	2	2	2,50±1,277	0,003
Post-test Stress	16	2	1	1		1,35±0,813	

Table 4 shows that the analysis using the Kruskal-Wallis test showed that there were no significant differences between the groups in anxiety, stress, and depression in the post-test. For depression, the Chi-Square value was 1,747 (p = 0,417), with no significant differences, but the self-hypnosis group had the lowest mean rank (28,20), suggesting better results. For anxiety, Chi-Square = 1,234 (p = 0,539), with the yoga pranayama group (28,08) showing better results than the daily (33,83) and self-hypnosis (29,60) groups. For stress, Chi-Square = 4,442 (p = 0,109), with the self-hypnosis group showing the lowest mean rank (27,58), indicating greater potential efficacy in stress reduction.

Table 4. Analysis of the differences in the level of Depression, Anxiety, and Stress in adolescent girls after the intervention of the Journaling, Yoga Pranayama, and Self-Hypnosis groups

Variable	Respondent Group	N	Mean Rank	Chi-Square	Asymp. Sig. (p)
Post-test Depression	Journaling	20	34,48	1,747	0,417
	Yoga Pranayama	20	28,83		
	Self Hypnosis	20	28,20		
Post-test Anxiety	Journaling	20	33,83	1,234	0,539
	Yoga Pranayama	20	28,08		
	Self Hypnosis	20	29,60		
Post-test Stress	Journaling	20	35,83	4,442	0,109
	Yoga Pranayama	20	28,10		
	Self Hypnosis	20	27,58		

DISCUSSION

Mental health allows people to reach their full potential, manage everyday stressors, work well, and give back to the community.[22] An inability to manage emotions often leads to difficulties interacting with others, working, and living everyday life. Emotional disorders are common in adolescents. Anxiety is one of the conditions most often related to managing emotions, especially feelings of fear or excessive worry. This disorder is common in the teenage age range, affecting 4,4 % of those aged 10–14 years and 5,5 % of those aged 15–19 years. According to estimates, 3,5 % of teenagers aged 15–19 and 1,4 % of adolescents aged 10–14 experience depression. Generally, the symptoms of anxiety and depression are similar, including abrupt and erratic mood changes.[23]

Adolescent activity is closely associated with stress, anxiety, and depression in adolescents. Teenagers' emotional strain at home, school, and in their surroundings can lead to mental health issues; thus, mental health service providers need to pay close attention to psychological issues. Depression is often associated with defensive reactivity due to feelings of anxiety, fear, or distress, even in less dangerous situations.[24] Depressed mood can worsen anxiety responses, particularly in situations perceived as threatening or dangerous. Emotion regulation is a change mechanism in the relationship between self-compassion and mental health problems. Self-compassion may be a relevant initial treatment target for individuals who avoid emotional experience. Some complementary therapy techniques that can improve emotional regulation include journaling, yoga, pranayama, and self-hypnosis.

Based on the results, there was a decrease in the level of depression from 3,65 ± 1,461 severe category to 2,55 ± 1,504 moderate category, with a p-value of 0,005, decrease in anxiety levels before and after being given journaling therapy with a mean of 4,20 ± 1,240 with severe category to 3,10 ± 1,714 moderate category, p-value 0,008, and there was a reduction of stress levels with a mean of 3,05 ± 1,638 with a moderate category to 2,05 ± 1,356 mild category, p-value of 0,018 (table 3). These results show that journaling therapy is effective in reducing depression, anxiety, and stress.

Journaling is a low-cost complementary therapy with no side effects, recommended by doctors for managing common mental health problems. The effectiveness of this method is supported by several studies conducted using a randomized controlled trial (RCT) method.[9] Journaling can be a tool to help move past pain and sadness towards peace and acceptance. Moreover, writing a journal provides a break from the busyness of school and time to think, reflect, or be silent.

The importance of writing includes perspective-taking, increasing understanding of oneself and others, spiritual nature, and promoting health and healing. Mental health can be stabilized with writing interventions on positive subjects oriented towards self-efficacy.[25]

Journaling is a behavior relevant to dispositional self-reflection.[26] Although studies in naturalistic journals are limited, previous experimental studies have evaluated the effects of writing about experiences and feelings. Preliminary results suggest that journal interventions with positive writing prompts may engage the process of self-reflection and be beneficial for improving well-being.[27] Writing an expressive journal helps to reduce anxiety, stress, and depression.[28]

The results showed the effectiveness of Pranayama Yoga therapy in reducing anxiety, stress, and depression. The mean initial depression level reduced from 3,20 ± 1,436 (moderate) to 2,00 ± 1,298 (mild), with a p-value of 0,022, and anxiety levels decreased before and after Pranayama Yoga therapy from 3,75 ± 1,372 (severe) to 2,55 ± 1,432 (moderate), with a p-value of 0,018. There was also a decrease in stress levels from 2,30 ± 1,372 in the mild category to 1,45 ± 0,999 in the normal category, with a p-value of 0,048 (table 3). The main goal of yoga is to create mental calmness to improve well-being and relaxation, reduce irritability, and have a positive outlook on life. Regular practice can potentially lower blood pressure, heart rate, and respiratory rate,

as well as improve mental health by inhibiting the posterior hypothalamus.[29] This increases the sympathetic reaction to stressful stimuli, helps restore stress-related autonomic regulatory reflex systems, and stimulates the reward centers in the midbrain. Furthermore, yoga works with self-soothing methods such as meditation and relaxation. It changes the stress response system by decreasing perceived anxiety and stress, reducing physiological arousal, which makes breathing easier and lowers blood pressure and heart rate.[30] Additionally, there is evidence that yoga increases heart rate variability, a measure of the body's flexibility in handling stress.

A previous study showed that pranayama significantly reduced states of anxiety and negative affect. Pranayama practice also modulates the activity of brain regions that play a role in emotion processing, specifically the amygdala, anterior cingulate cortex, anterior insula, and prefrontal cortex.[31] This study highlights the importance of Bhramari Pranayama in treating mental disorders, including stress, anxiety, and depression, as well as overall prevention. According to Ayurveda, continuous practice of Bhramari Pranayama reduces Raja and Tamadosha while increasing Satvaguna, which improves mental health.[32]

The sound of bees buzzing accompanies the slow breathing method, Bhramari Pranayama. Contrary to other pranayama methods, the humming sound produced during the breathing phase, combined with yoga poses, creates acoustic vibrations in Bhramari Pranayama.[33] These acoustic vibrations can significantly influence the intended effect.[34] Because of the absence of stretching exercises for the brain compared to other areas of the body, head vibrations are a good substitute, and sound-only vibrations may not be harmful to brain tissue. Therefore, it is clear that Bhramari Pranayama impacts various body systems. There is undoubtedly scope to achieve the desired impact on the autonomic nervous system, respiratory system, stress, anxiety, and general emotional state.[33]

This study examined how the slow-breathing technique known as "Nadishodhana" affected teenage girls' resting heart rate, blood pressure, peak expiratory flow rate, and basic problem-solving skills. The findings showed a significant increase in the peak expiratory flow rate. The beneficial outcomes can be used in educational institutions to enhance learning capacities and in workplaces to increase productivity. Daily exercise for a few minutes helps better organize the mind for work and study. A physical fitness program and lifestyle modification may include daily exercises to preserve improved physical and mental health. More research with a greater number of volunteers from various lifestyles is required to prove the positive benefits of pranayama.[35]

Pranayama helps direct energy throughout the body and to various parts of the brain. This method affects general functioning and improves performance. Puraka (inhalation), kumbhaka (restraint), rechaka (exhalation), and kumbhaka are the four steps that make up nadi-shodhan pranayam. By following these four procedures, the maximum amount of oxygen can be consumed, which improves blood circulation, provides the brain with sufficient oxygen, and increases critical energy and work efficiency. Pranayama increases energy flow and awakens various brain areas, leading to coherent mental functioning.[36]

Regular yoga practice enhances the function of the parasympathetic nervous system by downregulating the sympathetic nervous system, which triggers the relaxation response. In patients with mental illnesses, some brain chemicals, such as serotonin and gamma-aminobutyric acid (GABA), decline. Mood and happiness are significantly influenced by serotonin. According to a previous study, yoga naturally increases serotonin production. Yoga can enhance mental health by reducing the signs and symptoms of mental illnesses, including depression, anxiety, and stress.[37]

In this study, the provision of self-hypnosis therapy reduced depression, anxiety, and stress in adolescent girls. Depression levels after self-hypnosis therapy decreased from an initial mean of 3,30 ± 1,081 (moderate) to 1,90 ± 1,119 (mild), with a p-value of 0,001. The anxiety levels before and after self-hypnosis therapy decreased from a mean of 4,10 ± 1,071 (severe) to 2,65 ± 1,226 (moderate), with a p-value of 0,001. There was a decrease in stress levels from a mean of 2,50 ± 1,277 in the moderate category to 1,35 ± 0,813 in the normal category, with a p-value of 0,003 (table 3). Hypnosis helps direct cognitive and self-suggestion to change perceptions, behaviors, sensations, thoughts, or emotions. Most research has shown that hypnotherapy helps lower depressive symptoms, and some studies have even shown that hypnotherapy is more beneficial than antidepressant medication in areas such as general health and vitality.[38] Hypnosis is a helpful adjunct or stand-alone treatment that provides doctors with a flexible, economical, and efficient way to treat various medical and psychological issues, promote resilience, and maximize human potential.[39] It reduces anxiety as a stand-alone intervention or in conjunction with other treatment modalities.[40]

The use of clinical hypnosis as a complement to standard medical treatment for adolescents is an important method for maintaining balance between the mind and body. Self-directed therapeutic suggestions are used in clinical hypnosis to stimulate the imagination and improve the mind-body connection, which enhances emotional and physical well-being.[41]

Resistance training and conscious self-hypnosis have been shown to reduce perceived stress.[42] During the session, hypnotic induction creates a secure and tranquil mental space for mindfulness by promoting inward attention and receptivity to suggestions through soothing imagery. Furthermore, hypnotic examples of mindfulness-based ideas, such as present-moment awareness and nonjudgmental acceptance, complement

one another to help people concentrate and unwind without passing judgment. Deep suggestion, hypnotic imagination, and receptivity to mindfulness principles contribute to present-moment relaxation. In a previous study, mindful hypnotherapy showed promise as an effective intervention for reducing stress.[43]

Fisch et al.[44] conducted a multicenter randomized controlled trial on respondents in a group hypnotherapy program. Based on the results, the respondents experienced a decrease in perceived psychological stress (measured by a visual analog scale) and depression, as well as an increase in quality of life compared to individuals in the control group. Randomized clinical trials on hypnotherapy for depression have a high risk of bias (estimated at 85 %). However, there is insufficient evidence to suggest that hypnosis-based interventions reduce depression severity. This prevents the clinical recommendation of these interventions for real-world patients.[45] Cognitive hypnotherapy produces superior results in reducing depression, anxiety, and feelings of hopelessness compared with behavioral therapy.[38,46]

The Kruskal-Wallis analysis revealed no statistically significant differences among the journaling, yoga pranayama, and self-hypnosis groups in terms of post-intervention anxiety, stress, and depression levels. Nonetheless, descriptive statistics indicated that the yoga pranayama group exhibited lower anxiety levels, while the self-hypnosis group showed reduced stress and depression. These observations are consistent with the existing literature. Pranayama practices, such as Bhastrika, are associated with improved self-regulation, positive mood, and reduced stress and anxiety. Similarly, self-hypnosis has demonstrated efficacy in reducing stress and anxiety, with studies indicating its superiority over other interventions.[31,47]

Although the present study did not find statistically significant differences, the observed trends suggest the potential benefits of yoga pranayama in alleviating anxiety and self-hypnosis in mitigating stress and depression. These findings underscore the need for further research with larger sample sizes and controlled designs to substantiate the efficacy of these interventions.

This study had a limited sample size; therefore, the results are less generalizable and require research with a larger sample size. The short duration of the study did not capture long-term effects; thus, a longitudinal study is needed. In addition, the limited scope of therapy to only three methods limits the understanding of other therapies that may be effective in treating these conditions. Confounding variables such as family environment, school stress, and social factors may have affected the results. Finally, cultural and social influences may affect the effectiveness of therapies; therefore, further research is needed in various contexts.

CONCLUSIONS

Based on the results of the Kruskal-Wallis analysis, no significant differences were found between the journaling, yoga pranayama, and self-hypnosis intervention groups on the levels of anxiety, stress, and depression at posttest. However, descriptive analysis showed that yoga pranayama tended to be more effective in reducing anxiety, while self-hypnosis showed better potential in reducing stress and depression.

These findings may provide a basis for mental health practitioners to consider selecting interventions tailored to individual psychological needs. Yoga pranayama can be prioritized for anxiety management, while self-hypnosis is more relevant for managing stress and mild depression.

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CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

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