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Combined Expressive Writing and Progressive Muscle Relaxation to Reducing Anxiety and Stress Among Adolescent: a Case Study

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ABSTRACT

Background: Adolescent mental health issues have become a global concern due to their impact on emotional regulation, academic achievement, and social functioning. Therefore, non-pharmacological interventions are a potential solution to address these issues. **Objective:** This study evaluated the effects of muscle therapy in reducing symptoms of anxiety and stress in adolescents. **Methods:** This single-case study was conducted over a one-month period. One female was purposively selected based on her Depression Anxiety Stress Scale-21 (DASS-21) results, which indicated very severe anxiety and moderate stress. The intervention consisted of eight sessions combining progressive muscle relaxation and expressive writing activities conducted in the participant's home. Data were collected through observation, therapeutic evaluation, and pre-post DASS-21 assessments. **Results:** The intervention resulted in substantial improvements in the participants' psychological well-being. Anxiety scores decreased from 22 (very severe) to 10 (moderate), while stress scores decreased from 20 (moderate) to 10 (normal). Depression scores remained within the normal range before and after the intervention. Participants also reported feeling emotional relief and more comfortable expressing their feelings during the therapy process. **Conclusion:** This intervention can be implemented as an alternative holistic strategy in public health and mental health nursing practice.

Keywords: progressive-muscle-relaxation; expressive-writing; depression; anxiety; stress; adolescents

Background

Mental health problems among adolescents have become a major global health challenge that requires serious attention. The World Health Organization (WHO) estimates that approximately one in seven adolescents aged 10–19 years experiences a mental disorder, with anxiety and depression contributing significantly to the global burden of disease in this age group (1). Following the COVID-19 pandemic, the prevalence of emotional disorders among adolescents has increased across many countries, particularly in developing nations. UNICEF also reported a significant rise in anxiety, stress, and depression among adolescents in recent years (2).

In Indonesia, the 2023 Indonesian Health Survey reported an increase in the prevalence of emotional mental disorders among individuals aged ≥15 years compared with previous years (3). Adolescence is a critical period of psychosocial and neurological development; therefore, untreated mental health problems may lead to academic decline, impaired social relationships, maladaptive behaviors, and an increased risk of suicide (4).

Anxiety and stress frequently coexist in adolescents and involve both psychological and physiological responses. Adolescents experiencing anxiety often report excessive worry, difficulties with emotional regulation, and persistent negative thought patterns. These conditions may activate the sympathetic nervous system, leading to muscle tension, sleep disturbances, increased heart rate, and other somatic complaints (5). Furthermore, adolescents who are unable to express their emotions adaptively may internalize psychological distress, which can manifest as physical complaints or behavioral problems. Therefore, interventions that address both psychological and physiological aspects are needed to promote holistic mental health and well-being (6).

The management of adolescent mental health problems generally involves pharmacological treatment and psychotherapy. However, limited access to mental health services, stigma associated with psychiatric care, and inadequate coping skills among adolescents remain significant barriers to effective mental health management in community settings (7). Consequently, there is a need to develop simple, accessible, and self-administered non-pharmacological interventions that can serve as supportive strategies for reducing stress and anxiety among adolescents.

One widely used non-pharmacological intervention is expressive writing. This technique enable individuals to express their deepest thoughts and emotions through writing, thereby facilitating emotional catharsis and

emotional regulation. Pennebaker and Smyth suggested that expressive writing helps individuals organize emotional experiences into coherent narratives, thereby reducing psychological distress (8). Another effective intervention is progressive muscle relaxation (PMR) which reduces physical tension associated with anxiety through systematic cycles of muscle contraction and relaxation (9). PMR promotes the body's relaxation response by decreasing sympathetic nervous system activity and reducing physiological stress.

Several studies have demonstrated that the combination of expressive writing and PMR provides greater benefits compared with single interventions alone. This integrated approach reflects the principles of mind-body therapy by integrating emotional processing and physical relaxation simultaneously (10). Previous studies involving adolescents have shown that this combination can reduce anxiety, improve emotional regulation, and enhance sleep quality (11). Nevertheless, the application of combined expressive writing and PMR as part of nursing care for adolescents in Indonesia remains limited and has rarely been documented through detailed case reports.

Despite growing evidence supporting expressive writing and PMR as separate interventions, evidence regarding their combined implementation within nursing care for adolescents, particularly in community settings in Indonesia, remains scarce. Addressing this gap may provide practical evidence for nurses seeking feasible, low-cost interventions to manage adolescent anxiety and stress. Therefore, this case report aimed to evaluate the implementation of combined expressive writing and progressive muscle relaxation in reducing anxiety and stress among adolescents through a nursing care approach. Evaluation was conducted using the Depression Anxiety Stress Scale-21 (DASS-21) instrument to describe changes in the participant's psychological condition before and after the intervention.

Methods

This study employed a single-case study design to provide an in-depth description of the nursing care provided to an adolescent experiencing anxiety and stress. The study was conducted at the participant's home in Bunut Wetan Village, Pakis District, Malang Regency, East Java, Indonesia, over a one-month period from October 4 to November 4, 2025.

The participant was a 17-year-old Muslim female high school student (initials N.N.) who was selected using purposive sampling. Inclusion criteria were adolescents aged 10–19 years, according to the World Health Organization (WHO) classification, (12) willingness to participate, and the presence of anxiety or stress symptoms identified using the Depression Anxiety Stress Scale-21 (DASS-21)(13). Baseline assessment showed extremely severe anxiety and moderate stress, accompanied by panic sensations, muscle tension, excessive worry, and emotional distress. The participant was also considered suitable because of limited family emotional support, previous traumatic experiences, and a supportive home environment for implementing the intervention.

The independent variable was the combined PMR and expressive writing intervention, while the dependent variables were anxiety and stress levels. Outcome measures included the DASS-21 to assess anxiety and stress before and after the intervention, nursing observation sheets to document physical, emotional, and behavioral responses, a simple Likert-scale evaluation to assess perceived relaxation, emotional clarity, and personal insight after each session, and nursing care records documenting interventions and participant progress.

The independent variables in this study were the combined interventions of Progressive Muscle Relaxation (PMR) and expressive writing. The dependent variables were the levels of anxiety and stress in adolescents. Some instrument were included in the study such as: depression Anxiety Stress Scale-21 (DASS-21), used to measure anxiety and stress levels before and after the intervention; nursing observation sheet, used to document the participant's physical, emotional, and behavioural responses during the intervention sessions; simple Likert scale evaluation, used at the end of each session to evaluate physical relaxation, emotional clarity, and personal insight gained after the intervention; and nursing care documentation, used to record all nursing actions, participant responses, and the patient's clinical progress throughout the study.

PMR was performed in a quiet environment with the participant in a comfortable sitting or lying position. Each muscle group was contracted for 5–10 seconds and then relaxed for 20–30 seconds while the participant practiced slow, controlled breathing (14)(15). The exercises involved the hands, forearms, shoulders, face, jaw, neck, back, abdomen, and legs. Muscle groups affected by injury or musculoskeletal disorders were excluded when necessary.

Expressive writing was conducted immediately after PMR. The participant was asked to write continuously for 15–20 minutes about personal experiences, thoughts, emotions, and the meaning of those experiences (16)(17). Writing prompts were provided to facilitate emotional expression. A quiet environment with relaxing music was maintained throughout the session. The participant was informed that the writing would not be evaluated and could be discarded after each session to encourage honest and unrestricted self-expression.

The combined intervention consisted of eight sessions conducted at the participant's home. Each session lasted approximately 40 minutes, including 20 minutes of PMR followed by 20 minutes of expressive writing. The sessions progressively addressed relaxation training, identification of physical tension, emotional awareness, negative thought patterns, reflection on traumatic experiences, positive affirmations, recognition of personal strengths, and development of adaptive coping strategies. Between sessions, the participant was encouraged to

practice PMR and complete brief expressive writing exercises independently at home.

Data were collected through interviews, direct observation, DASS-21 assessments, Likert-scale evaluations, and nursing documentation. Baseline assessments were completed before the intervention, and outcome evaluations were performed after the final session. DASS-21 was administered only before and after the intervention to minimize participant burden. Data were analyzed descriptively by comparing pre- and post-intervention findings based on DASS-21 scores, observational records, participant self-evaluations, and nursing documentation. The findings are presented according to the stages of the nursing care process.

Before data collection, the participant received an explanation of the study objectives, procedures, potential benefits, and minimal risks. Written informed consent was obtained prior to participation. Participant confidentiality was maintained by using initials throughout the study, and all procedures complied with established ethical principles for human research.

Results

The implementation of combined Progressive Muscle Relaxation (PMR) and expressive writing interventions over eight sessions demonstrated positive changes in the participant's psychological condition. These changes were identified through measurements using the Depression Anxiety Stress Scale-21 (DASS-21), which was administered before the intervention (pre-test) and after the completion of all intervention sessions (post-test).

Table 1. Comparison of DASS-21 scores before and after the intervention

Category	Pre-test		Post-test		
	Score	Interpretation	Score	Interpretation	
Depression	4	Normal	6	Normal	Remained Normal
Anxiety	22	Extremely Severe	10	Moderate	Significant reduction
Stress	20	Moderate	10	Normal	Significant reduction

Based on Table 1, the anxiety domain showed the most prominent improvement, with the score decreasing from the extremely severe category to the moderate category. This finding indicates that the combined PMR and expressive writing interventions were effective in reducing both the physical and emotional symptoms of anxiety experienced by the participant.

Before the intervention, the participant frequently reported physical symptoms such as trembling, excessive panic, and muscle tension when facing certain situations. Following the completion of the intervention sessions, the intensity of these symptoms decreased, and the participant appeared more capable of controlling emotional responses.

The stress domain also demonstrated improvement, changing from the moderate category to the normal category. During the evaluation process, the participant reported reduced irritability, decreased emotional tension, and lower levels of excessive energy expenditure associated with anxiety. These findings suggest that the combination of PMR and expressive writing helped the participant manage stress more adaptively.

Meanwhile, the depression domain remained within the normal category both before and after the intervention. Although there was a slight increase in the score, the participant did not demonstrate clinically significant depressive symptoms.

In addition to the quantitative findings, the participant also expressed positive subjective responses toward the intervention. The participant stated that the writing activities helped her feel emotionally relieved and provided a medium to express feelings that had previously been difficult to communicate to others. This was reflected in the participant's statement:

"I had never written like this before, and it made me happy because it felt like I finally had someone to talk to."

Overall, the findings indicate that the combination of Progressive Muscle Relaxation (PMR) and expressive writing had a positive impact on reducing anxiety and stress levels in the adolescent participant.

Discussion

The combined intervention of Progressive Muscle Relaxation (PMR) and expressive writing was effective in reducing anxiety and stress in the adolescent participant. This intervention worked through the concept of the mind-body connection, which emphasizes the relationship between physical and psychological conditions (18). PMR operates through a bottom-up mechanism by reducing physical tension and promoting mental relaxation, whereas expressive writing operates through a top-down mechanism by helping individuals organize their thoughts and emotions, thereby alleviating psychological distress (19). Together, this intervention provided complementary

coping strategies that addressed both physiological and emotional aspects of anxiety and stress.

The effectiveness of PMR observed in this study is consistent with Jacobson's theory, which proposes that anxiety is closely associated with muscle tension and sympathetic nervous system activation. Deliberate muscle relaxation enables the body to achieve a state of physiological relaxation, thereby reducing anxiety-related responses (20). have demonstrated that PMR effectively reduces anxiety among adolescents and young adults by decreasing muscle tension, promoting physical relaxation, and improving physiological responses to stress (21). These findings are consistent with the present study, in which the participant experienced reductions in physical symptoms of anxiety, including trembling, panic sensations, and muscle tension following the intervention. Physiologically, PMR may enhance parasympathetic nervous system activity while increasing the release of inhibitory neurotransmitters such as Gamma-Aminobutyric Acid (GABA), thereby reducing excessive neural activity and lowering stress hormone levels associated with anxiety symptoms (22). These mechanisms may explain the effectiveness of PMR in reducing anxiety among adolescents and young adults reported in previous studies.

In addition to PMR, expressive writing played a significant role in helping the participant manage emotional stress. Expressive writing provided a structured opportunity to explore and express previously suppressed thoughts and emotions. The process of writing thoughts and emotions facilitated emotional catharsis and enabled unstructured experiences to be reorganized into meaningful narratives. Consequently, the participant demonstrated improved emotional awareness, improved recognition of stressors, and an enhanced ability to communicate feelings that had previously been difficult to express verbally.

Pennebaker's theory explains that expressive writing can reduce psychological burden through cognitive and emotional reorganization processes (23). Neurologically, writing activities may shift emotional processing from the amygdala toward the prefrontal cortex, which is associated with logical thinking and emotional regulation (24). This mechanism may help individuals gain better emotional control and develop more adaptive responses to stressful situations. In the present study, the participant appeared calmer, less irritable, and more capable of managing daily stressors following the intervention.

The findings of this study are also consistent with previous research demonstrating that expressive writing enhances emotional awareness, reduces psychological distress, and improves emotional regulation. Studies involving adolescents have shown that expressive writing enables individuals to express emotional experiences that are difficult to communicate verbally, thereby contributing to reductions in stress and anxiety (25). The effectiveness of the intervention may also have been influenced by the establishment of a strong therapeutic relationship between the researcher and the participant. Throughout the intervention, the participant demonstrated progressively greater emotional openness and comfort in expressing personal experiences. This finding is consistent with Hildegard Peplau's interpersonal relations theory, which emphasizes that the therapeutic relationship between the nurse and the patient is a fundamental component of psychiatric nursing care. By providing a supportive, empathetic, and nonjudgmental environment, the researcher facilitated a sense of psychological safety that encouraged emotional expression. The resulting therapeutic alliance likely enhanced the participant's motivation and adherence throughout the intervention program (26).

The combination of PMR and expressive writing appears particularly appropriate for adolescents because emotional regulation skills continue to develop throughout this stage of life (27). Adolescents frequently encounter difficulties in managing psychological stress and often possess limited adaptive coping strategies (28). Therefore, integrating physical relaxation techniques with emotional expression through writing may represent an effective, accessible, and self-directed non-pharmacological intervention for reducing anxiety and stress.

No adverse events or significant complications were observed during the intervention. Both PMR and expressive writing are non-invasive interventions with minimal risk because they do not involve pharmacological treatment or physically invasive procedures (29). The participant completed all intervention sessions without experiencing excessive physical fatigue or increased emotional distress. These findings indicate that the intervention was safe, well tolerated, and acceptable. The present findings are consistent with previous studies suggesting that combining physical relaxation and emotional exploration provide complementary benefits for managing stress and anxiety (30). The combination of PMR and expressive writing may simultaneously address both physiological and psychological dimensions of stress and anxiety, thereby helping adolescents develop more adaptive coping strategies.

This study has several limitations. First, it employed a single-case design with only one participant, therefore the finding cannot be generalized to the broader adolescent population. Second, the intervention period was relatively short, limiting the assessment of long-term outcomes and a relatively short intervention period. Third, the absence of a control group precludes determination of the independent contribution of each intervention. Further study involving larger sample, longer follow-up periods, and controlled study designs are recommended to strengthen the evidence regarding the effectiveness of combined PMR and expressive writing interventions in adolescents.

Overall, the findings of this study suggest that the combination of PMR and expressive writing has considerable potential as an independent nursing intervention for reducing anxiety and stress among adolescents. These interventions are relatively simple, cost-effective, non-invasive, and can be implemented as self-care strategies in both psychiatric and community nursing settings (31).

Conclusion and Recommendations

This case study suggest that the combination of PMR and expressive writing may help reduce anxiety and stress in adolescents. The intervention appeared to improve emotional awareness, emotional expression, and coping skills while reducing both psychological and physical tension. The participant also demonstrated greater emotional comfort and engagement throughout the nursing care process, which may have been supported by the establishment of a therapeutic nurse and patient relationship.

As simple, safe, and non-pharmacological interventions, PMR and expressive writing have the potential to be incorporated into psychiatric and community nursing practice as self-management strategies for adolescents experiencing anxiety and stress. Further research involving larger samples, longer intervention periods, and controlled study designs is needed to confirm the effectiveness of this combined intervention. Future studies should also explore its implementation in school- and community-based mental health programs to support adolescent emotional well-being.

Conflict of Interest

There is no conflict of interest related to this publication

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