EFFECTIVENESS OF SOUND RELAXATION TECHNIQUES IN REDUCING ANXIETY IN GRADE 12 STUDENTS AT SMAN 9 PEKANBARU

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Abstract

Anxiety is a psychological disorder that is often experienced by high school students, especially when facing academic, social and family pressures. If not treated well, anxiety can have a negative impact on students' mental health and academic performance. One non-pharmacological method that can be used to reduce anxiety is the natural sound relaxation technique. This technique works by stimulating the parasympathetic nervous system, which plays a role in creating a relaxing effect and reducing stress levels. This study aims to determine the effectiveness of natural sound relaxation techniques in reducing anxiety in grade 12 students at SMAN 9 Pekanbaru. This research uses a quasi-experimental design with a pretest-posttest non-equivalent control group design approach. The sample consisted of 42 students selected using stratified random sampling techniques. Anxiety measurements were carried out using the State-Trait Anxiety Inventory (STAI) before and after the intervention. Data were analyzed using a paired T test (Paired T-Test) to see differences in anxiety levels before and after the intervention. The results showed that there was a significant reduction in anxiety levels in the treatment group after being given the natural sound relaxation technique intervention (p-value < 0.05). In contrast, the control group who did not receive the intervention did not show significant changes in anxiety levels. These results prove that the natural sound relaxation technique is effective in reducing anxiety in students. In conclusion, natural sound relaxation techniques can be used as an effective non-pharmacological therapy method in managing anxiety in high school students.

Keywords: *Anxiety, Natural Sounds Relaxation Technique, High School Students*

INTRODUCTION

High school students (SMA) are adolescents aged 15–18 who are in an important developmental stage of their lives. This stage includes identity formation, career exploration, and adjustment to academic and social pressures (Prasetyaningtyas et al., 2022). In the educational environment, high school students face academic and social demands that can trigger anxiety, which, if not addressed, may negatively affect their mental health and academic performance (Solihah & Liana, 2017). According to the World Health Organization (WHO, 2023), anxiety is a common psychological disorder, with a global prevalence of around 3.6%. Data from the Indonesian Ministry of Health indicate that one in three adolescents experiences mental health problems, with anxiety being the primary disorder. Females are more vulnerable to anxiety than males, with prevalence rates of 28.2% and 25.4%, respectively (I-NAMHS,

2022). The effects of anxiety include tension, difficulty concentrating, sleep disturbances, and decreased academic performance (Duraku, 2017).

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The author conducted a preliminary study at SMAN 9 Pekanbaru on November 1, 2024, through interviews with the curriculum department and observations of 10 students. The results showed that 70% of students reported experiencing anxiety due to academic pressure, family demands, and changes in the social environment, while 30% did not experience significant anxiety. Based on this background, this study aims to determine the effectiveness of natural sound relaxation techniques in reducing anxiety among 12th-grade students at SMAN 9 Pekanbaru. It also seeks to examine the effect of natural sound relaxation techniques on students' anxiety levels and to measure their effectiveness before and after the intervention. This research is expected to benefit schools in student development, institutions as an academic reference, and future researchers as a source of information, as well as to provide insight for students in managing anxiety.

RESEARCH METHODS

This study employed a quantitative approach with a quasi-experimental design, specifically a Pretest–Posttest Non-Equivalent Control Group Design, involving two groups: a control group and an intervention group, without random assignment. The population consisted of 12th-grade students at SMAN 9 Pekanbaru totaling 390 students, including 8 science-track classes and 3 social science-track classes. The sample size was determined using the Slovin formula, resulting in 38 respondents; however, with a 10% dropout allowance, the total sample became 42 students. Sampling was conducted using Stratified Random Sampling to account for differences between science and social science majors.

The research instrument was a questionnaire consisting of two parts: a demographic questionnaire covering age, gender, and academic track, and the State-Trait Anxiety Inventory (STAI) questionnaire to measure anxiety levels, which has been widely used in psychological research with high validity and reliability.

In the intervention group, treatment was administered through natural sound music therapy, such as the sound of flowing water, birdsong, and ocean waves. The intervention procedure followed Standard Operating Procedures (SOP) in three stages: the preparation stage, in which respondents were placed comfortably in a quiet room; the implementation stage, in which respondents listened to natural sounds through speakers at a volume of 40–50 dB for 20 minutes; and the termination stage, which involved evaluating respondents' feelings after the therapy.

The collected data were analyzed using univariate analysis to describe respondent characteristics and bivariate analysis using a paired t-test to compare anxiety levels before and after the intervention.

RESEARCH RESULTS

1. Univarate Analysis

A. General Data

a. Usia

Tabel 1. Distribution of Respondent Characteristics of Grade 12 Students at SMAN 9

KATEGORI	N	%	MEAN	MIN	MAX
18	15	35.7	17.6	16	18
17	22	52.4			
16	5	11.9			
Total	42	100%			

Source: Primary Data

Pekanbaru Based on Table 1, the distribution of respondents by age category shows that the majority were 17 years old, comprising 22 respondents (52.4%). The overall mean age was 17.6 years, with a minimum age of 16 years and a maximum of 18 years. This indicates that most respondents were in the late adolescent age range.

b. Jenis Kelamin

Tabel 2. Distribution of Respondent Characteristics by Gender of Grade 12 Students at SMAN 9 Pekanbaru

KATEGORI	N	%
Laki-laki	6	14,3
Perempuan	36	85,7
Total	42	100%

Source: Primary Data

Based on Table.2, most respondents in this study were female, totaling 36 individuals (85.7%), while male respondents accounted for 6 individuals (14.3%). This indicates that female participation was more dominant than male participation in this study.

B. Specific Data

a. Intervention Group

Tabel 3. Distribution of Mean Anxiety Scores Before and After the Natural Sound Relaxation Technique in the Intervention Group

	N	MEAN	SD	SE	MIN	MAX
Pre Test	21	103.19	6.983	1.524	90	117
Post Test	21	88.71	5.623	1.227	79	99

Source: Primary Data

Based on Table 3, the effect of the natural sound relaxation technique on anxiety levels in the intervention group (n = 21) shows that the mean pre-test score before the intervention was 103.19, while the mean post-test score after the intervention decreased to 88.71, indicating a reduction in anxiety levels following the intervention.

b. Kontrol Group

Tabel 4. Distribution of Mean Anxiety Scores Before and After Without the Natural Sound Relaxation Technique in the Control Group

	N	MEAN	SD	SE	MIN	MAX
Pre Test	21	104.62	10.205	2.227	86	121
Post Test	21	104.76	10.285	2.244	85	121

Source: Primary Data

Based on Table 4, respondents in the control group who did not receive the natural sound relaxation technique (n = 21) had a mean pre-test score of 104.62 and a mean post-test score of 104.76, indicating that there was no meaningful change in anxiety levels without the intervention.

2. Bivariate Analysis

Tabel 5. Tabel Distribution of Mean Anxiety Levels Before and After Intervention in the Treatment and Control Groups

	Intervention	N	Mean	Sd	P *Value*
Intervention Group	Pre Test	21	103.19	6.983	0,000
	Post Test		88.71	5.623	
Kontrol Group	Pre Test	21	104.62	10.205	0,419
	Post Test		104.76	10.285	

Source: Primary Data

The results showed that the mean anxiety score in the treatment group was 103.19 at pretest and decreased to 88.71 at posttest. In contrast, the control group had a mean pretest score of 104.62 and a posttest score of 104.76. Statistical analysis in the treatment group yielded a p-value of 0.000, indicating that the natural sound relaxation technique had a significant effect in reducing students' anxiety levels. Meanwhile, the statistical results in the control group showed a p-value of 0.419, indicating that the natural sound relaxation technique did not produce a significant effect on reducing students' anxiety levels.

Tabel 6. Tabel Comparison of the Distribution of Mean Anxiety Levels Between the Intervention and Control Groups

	N	Mean	SD	SE	P *Value*
Intevention	21	88.71	5.623	1.227	0,000
Kontrol	21	104.76	10.285	2.244	

Source: Primary Data

Based on data from 21 respondents in each group, the mean anxiety score in the intervention group was 88.71, while the mean score in the control group was 104.76, indicating a mean difference of 16.05 points. Statistical testing showed a p-value of 0.000 (< 0.05), demonstrating a statistically significant difference between the control and intervention groups.

These results indicate that the intervention was proven to be more effective in reducing anxiety levels compared to the control condition.

DISCUSSION

1. Univariate Analysis

The characteristics of this study showed that the majority of respondents were 17 years old (52.4%), which falls within late adolescence, a stage prone to anxiety due to academic and social pressures. This age represents a crucial period in emotional development, during which individuals often face challenges related to academic demands, social relationships, and future preparation. This finding is consistent with Poetry et al. (2024), who reported that although most adolescents exhibit low levels of social anxiety, attention is still needed to prevent negative impacts on their psychological well-being.

Most respondents were female (85.7%). Research by Ayunia et al. (2019) indicates that females tend to be more vulnerable to anxiety than males due to psychological and hormonal factors. This condition may influence the study results, as females are generally more expressive in conveying anxiety and more responsive to natural sound relaxation techniques than males.

In the intervention group, the mean anxiety score decreased from 103.19 (pre-test) to 88.71 (post-test), with the standard deviation declining from 6.983 to 5.623. This reduction indicates that natural sound relaxation techniques were effective in helping reduce anxiety. Respondents reported that prior to the intervention, their anxiety disrupted their quality of life and often appeared without a clear reason. However, after receiving natural sound therapy, they felt calmer and more able to control their anxiety. These findings are supported by Imawati (2019) and Ayunia et al. (2019), who found that listening to natural sounds can stimulate the parasympathetic nervous system, helping the body relax and lowering anxiety levels.

The control group did not experience significant changes in anxiety levels. The mean pre-test score was 104.62, while the post-test score slightly increased to 104.76. The standard deviation also rose from 10.205 (pre-test) to 10.285 (post-test). These results indicate that without the natural sound relaxation intervention, respondents' anxiety levels tended to remain high or even show a slight increase.

2. Bivariate Analysis

The statistical test results showed that in the intervention group, the p-value was 0.000 < 0.05, indicating that the natural sound relaxation technique was effective in reducing anxiety. Meanwhile, in the control group, the p-value was 0.419 > 0.05, indicating that without relaxation techniques, anxiety did not change significantly. These findings are consistent with Smith et al. (2020), who reported that natural sound therapy can significantly reduce cortisol levels, the stress hormone. Another study by Johnson and Peters (2021) found that listening to natural sounds for 15 minutes daily over two weeks improved sleep quality and reduced anxiety. Furthermore, research by Wang et al. (2022) demonstrated that natural sound therapy increased relaxation levels by up to 30% compared to groups that did not receive the intervention.

Thus, natural sound relaxation techniques can serve as an effective method for managing anxiety, either independently or with professional guidance. This technique works by stimulating the parasympathetic nervous system to lower stress responses, enhance emotional calmness, and help improve sleep quality. Therefore, natural sound therapy represents a promising non-pharmacological intervention for enhancing mental well-being, especially among students facing academic pressure.

CONCLUSION

Based on the research results, respondents were aged between 16 and 18 years, with the majority being female, totaling 36 participants (85.7%). In the intervention group, the mean pre-test score was 103.19, while the mean post-test score after treatment decreased to 88.71. In contrast, the control group (without intervention) had a mean pre-test score of 104.62 and a mean post-test score of 104.76.

The Paired T-test results showed that the intervention group obtained a p-value of 0.000 < 0.05, indicating that the natural sound relaxation technique had a significant effect in reducing students' anxiety. Furthermore, the Independent T-test results showed a p-value of 0.000 < 0.05, meaning there was a significant difference between the control and intervention groups, confirming that the intervention was effective in the treatment group.

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