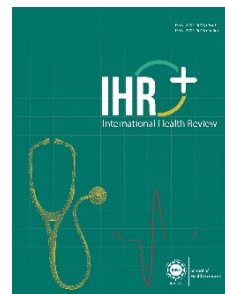
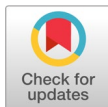


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Title: Effectiveness of Jacobson Relaxation Technique and Quranic Recitation in Reducing Anxiety among University Students: A Quasi Experimental Study

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Effectiveness of Jacobson Relaxation Technique and Quranic Recitation in Reducing Anxiety among University Students: A Quasi-Experimental Study

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ABSTRACT

Anxiety is a common disorder among students due to workload or panic-related conditions during initial academic interactions before exams. Jacobson Progressive Muscle Relaxation (JPMR) techniques, involving tensing and relaxing body muscles, have shown efficacy in alleviating anxiety and strengthening muscles. Additionally, Quranic Recitation has demonstrated effectiveness in reducing student anxiety, promoting mental and spiritual relaxation. The objective of this study is to evaluate the efficiency of JPMR and Quranic Recitation among university students in relieving anxiety level before their exams. The research employed a Quasi-Experimental design by using non-probability convenience sampling with a sample size of 42 participants. Data analysis was conducted using the Statistical Package for the Social Sciences (SPSS) version 29. The study utilized the Depression, Anxiety, Stress Scale (DASS-21), an internationally recognized questionnaire. Participants provided informed consent and were selected based on specific inclusion criteria: first-year students experiencing exam-related anxiety, elevated DASS scores, and absence of other psychotic or stress-related issues. The study aimed to assess the effectiveness of interventions in mitigating anxiety among these students. JPMR and Quranic Recitation are both clinically and significantly effective treatment protocol for anxiety in students. However, the Group B (Combined) participants achieved a lower post-treatment median anxiety score of 2 compared to Group A (only JPMR) with a median of 3. This led to the conclusion that significant difference between both groups, showing Quranic Recitation combined with JPMR were more effective than JPMR.

Keyword: DASS-21, exam anxiety, Jacobson Progressive Muscle Relaxation (JPMR), Quranic Recitation, Surah Al-Rehman

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1. INTRODUCTION

Anxiety is a feeling that is felt when one encounters uncomfortable or troubling events. It is strongly related to fear and concern [1]. It causes mental, emotional, and physical exhaustion, often leading to a stress cycle and feelings of overwhelm. It often leads to helplessness, loss of control, childhood stress, depression, bad performance in assessments, decreased level of interest in academics, and low confidence [2]. Within the academic environment, students are particularly vulnerable, and experience physical and psychological effects of pre exam anxiety which impairs students' performance, decreases confidence, and leads to memory deficits [3, 4]. The prevalence of exam anxiety among students is around 77%, and the prevalence of general anxiety among students is 28%. Medical and nursing students, specifically those in their first and second year tend to be more stressed due to unfamiliar pressures, financial concerns, and academic adjustments [5].

Stress is the body's response to pressure which leads to cardiac diseases, depressive disorders, immune system dysfunction, and other health related problems [6]. Pharmacological therapy has significant effect in reducing acute anxiety but it has many side effects for prolong usage. So, non-pharmacological therapies should be first line of choice in reducing anxiety which can be either music therapy, relaxation techniques or exercise. These techniques are easy to perform which are used to treat psychological stress as well as physical stress [7]. Relaxation techniques are of different types which may include progressive muscle relaxation techniques (JPMR), deep breathing exercises, guided imagery and many other techniques. These are sets of physical steps in response to stress or anxiety [8]. Different types of techniques are used for different types of patients and anxiety conditions [9].

JPMR techniques were first described by Jacobson in 1938 involving the systematic tensing and relaxing of specific muscle groups to achieve deep physical and mental calm [6]. By performing this technique, mind and body are relaxed deeply from any type of anxiety or stress [10]. The efficacy among healthcare students, demonstrated that JPMR significantly reduced anxiety among nursing students during their clinical training. Furthermore, its benefits have been validated across specialized clinical settings, including pediatric and maternity training, highlighting its versatility as an intervention for student stress [11].

Beyond physical relaxation, spiritual and auditory interventions offer significant psychological benefits. Islamic scholars like Ibn Sina historically, viewed mental illnesses as physiological problems, rejecting the demonization concept. Ibn Sina believed a strong spiritual connection with God through religion can aid in treating illnesses, as the world's order originates from God [12].

The Quran and Islamic practices can help Muslims cope with mental health issues like depression. The Holy Quran is the last book revealed by Allah to mankind. It was sent to Holy Prophet Hazrat MUHAMMAD (P.B.U.H) through angel JIBRAEL. The Holy Quran is the complete code of life, it has rules and principles to live life accordingly. The Holy Quran is a source of healing and guidance as it is written in the Quran at different places repeatedly [13]. There are 114 Surah's in the Quran and every Surah has its own value and effect in human life. Surah Al-Rehman is more effective in treating anxiety in human facing challenges and stress in one's life because it is a non-pharmacological therapy with religious approach. So, it increases patient satisfaction and adherence to treatment because it is recited from depth of the heart [12].

Musical therapy plays a vital role in relieving one's mind from anxiety or stress. Music is found to be effective for treatment of anxiety or depressive syndrome. Modern Receptive Music therapy, where patients listen to specific sounds, has been adapted to a religious context through Quranic Recitation, which can relieve stress and promote emotional and spiritual well-being [11]. Specifically listening to Surah Al-Rehman, particularly, the Recitation by Qari Abdul Basit known for its unique melodious tone, has been shown to calm listeners and decrease depression scores. He was an Egyptian Quran reciter and Hafiz. He is regarded as one of the best Quran reciters till now. Studies have showed that listening to the recitation of Surah Al-Rehman by Qari Abdul Basit decreases the level of depression and calms the listener [14].

The objective of this research was to clarify the efficacy of JPMR and Quranic Recitation in reducing anxiety among the students of first year in medical colleges. There is limited comparative research on their relative efficacy or synergistic potential among first-year medical students facing exam-related pressure. The primary objective of this research was to evaluate and compare the effectiveness of two intervention protocols: Group A (JPMR alone) and Group B (JPMR combined with Quranic

Recitation). The study aimed to determine which intervention yields a more significant reduction in anxiety levels as measured by the Depression, Anxiety, Stress Scale (DASS-21), thereby establishing an evidence-based relaxation protocol for students.

2.MATERIAL AND METHODS

2.1. Study Design.

The study employed a quasi-experimental study design by using non-probability convenience sampling, in which two groups were made by non-random method, out of which one (Group A) received JPMR and the other (Group B) received JPMR and Quranic Recitation.

2.2. Study Setting

The data was gathered from Johar Institute of Professional Studies Lahore (JIPS).

2.3. Study Duration

The overall study duration was six months after the approval of synopsis (March2024-SEP2024).

2.4.Sampling Technique

Our sampling technique was non-probability convenient sampling technique.

2.5. Data Collection Tools

The tools used for data collection was DASS-21 questionnaire.

2.5.1.DASS-21 Questionnaire. Dass-21 scale is proved to be very significant for early diagnosis of anxiety. It has excellent convergent and concurrent properties. It is used as an instrument to measure levels of anxiety and its symptoms. It is also known as an instrument of screening for anxiety. It consists of a questionnaire with 21 questions which are translated into different languages. Each question has its score starting from 0 (no symptom felt) to 3 (highly present symptom). Dass-42 has a validated questionnaire, used widely as a short form known as Dass-21, after completion of questionnaire score is multiplied by 2. For anxiety, 0-7 range is considered as normal while 8-20 range is considered as abnormal mental condition [15]. ICC value of DASS-21 questionnaire was 0.82 which shows good reliability [16]. Dass-21 is considered to have sensitivity of 78-89%

and specificity of 71-76% [17].

2.6. Sample Size

A sample size of 42 students was taken by non-random allocation. Participants were divided sequentially with first 21 students recruited into Group A and the subsequent 21 into Group B.

2.7. Sample Collection Criteria

2.7.1. Inclusion Criteria.

- Participants of age between 18-23 were included
- Both genders (Male and Female) were included
- First year university students were included
- Participants were from Muslim student population to ensure spiritual intervention.
- Students who have increased Dass-21 score, with subscale score of 8 or higher, are categorized to have a condition beyond normal [18, 19].

2.7.2. Exclusion Criteria.

- Students who listen to Quran every day [19].
- Students taking anti-psychotic drugs
- Students who practice any other relaxation techniques (Deep Breathing Technique, Post Isometric Relaxation techniques etc.) [20].
- Students having gone through any recent family issue or other depression (financial stress, psychological depression) [18-20].

2.8. Data Collection Procedure

The study was conducted by non-probability convenience sampling technique (based on inclusion and exclusion criteria). A sample of 42 students was taken from 3 classes and data was collected just before four week lead up to final exam and both groups were assessed at the same time. Students were divided into two groups. First 21 students were recruited to Group-A and other 21 students were recruited to Group-B. Group-A received Jacobson relaxation Technique and Group-B received Jacobson relaxation and Quranic Recitation. These techniques were performed for 4 weeks, in two sessions per week for both groups. JPMR involved a 60-

minute session focusing on tensing and relaxing the muscle groups in a sequence from head to toe, while Quranic Recitation involved listening to Surah Al Rehman (recited by Qari Abdul Basit) for 20-25 minutes via an MP3 player using headphones conducted in a setting provided by Johar institute of professional studies. Before data collection, consent was taken from each student. Students filled DASS-21 questionnaire in their first session before intervention and in their last session after intervention. After collecting demographics and DASS-21 readings, students were guided about how to perform Jacobson relaxation techniques and to listen Quranic Recitation.

2.8.1. Jacobson's Muscle Relaxation Technique. Jacobson Muscle Relaxation Technique turned out to be very effective in reducing anxiety. Under supervision, students were guided through a sequence of contracting and relaxing muscle groups. Participants tensed each muscle group for approximately 10 seconds followed 20 seconds relaxation period to distinguish between states of tension and relaxation. Muscle groups are tensed in a specific pattern from head to toe [21]. For relaxation purposes, 60 minute sessions were conducted consecutively for 4 weeks with two sessions per week [22].

2.8.2. Quranic Recitation. In Addition to JPMR protocol, Group B participants engaged in receptive therapy by listening to Quranic recitation during the same weekly sessions. Quranic Recitations have valuable effect on relieving anxiety. Quranic Recitation is a non-pharmacological treatment for anxiety. In this type of relaxation, Quranic Recitation like Surah Al-Rehman (recited by Qari Abdul Basit) is played for 20-25 minutes with the help of MP3 player device in a quiet room to minimize distraction by using headphones. Audio was delivered at a standardized comfortable volume to ensure calming effect without auditory strain. It was played consecutively for 4 weeks, twice in a week. Before and after this procedure, the questionnaire was filled to evaluate the effectiveness of Quranic Recitation [12].

2.9. Data Management

Data was collected from Johar institute of professional studies, Lahore. The data was collected before and after the procedure when intervention was performed. DASS-21 questionnaire was filled, in which questions related to anxiety were answered by the subjects.

2.10. Ethical Issues

The subjects were fully informed before the intervention, and the purpose of this study was dictated as well. Data was kept confidential and was not shared to any outside source for public display. The subjects were fully free to fill the questionnaire or to withdraw at any stage during the procedure.

2.11. Data Analysis

Data Analysis for this study was conducted by using statistical software for social science (SPSS version 29). Data normality were assessed by using the Shapiro-Wilk test which indicated that the data was not normally distributed ($p < 0.001$). Consequently, non-parametric tests; the Wilcoxon signed rank test for intra group changes, and the Mann Whitney U test for Across group comparisons, were utilized.

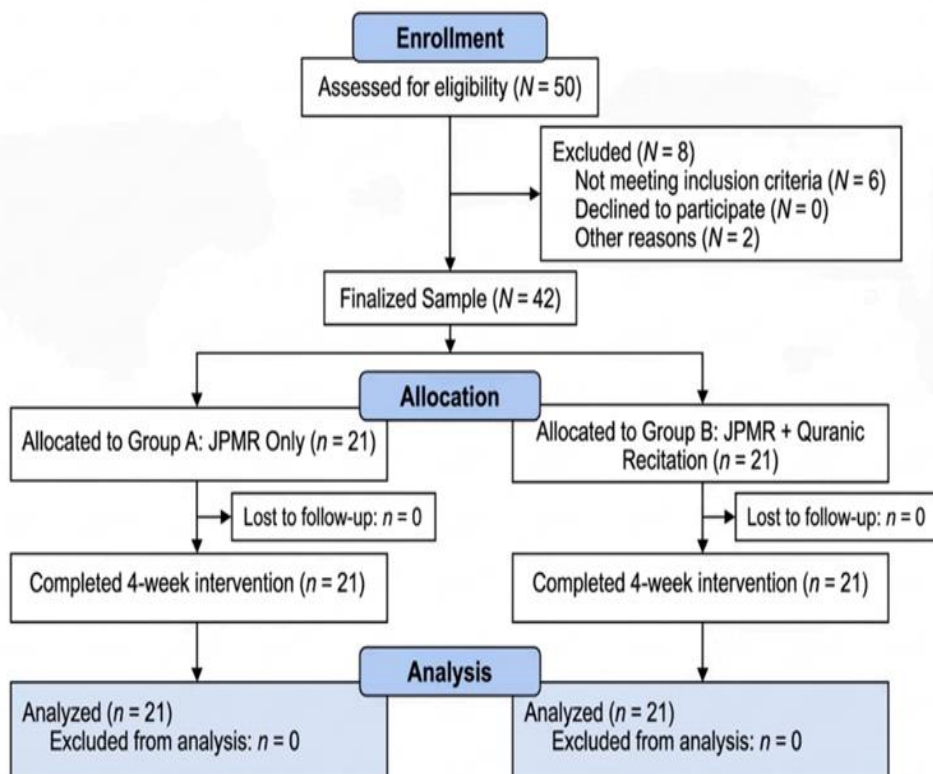


Figure 1. Consort Flow Chart

3.RESULTS

To determine the appropriate statistical analysis, Shapiro Wilk test was performed on the sample $N = 42$ to assess the normality of data. The level of significance (α) was less than 0.05 for all variables. Hence, the Mann Whitney test and Wilcoxon signed rank test were applied to check the results of our data.

A total of 42 participant's demographic analysis showed that most were aged 18 (54.8%), followed by 19 (28.6%), 20 (11.9%), and 21 (4.8%), with a mean age of 18.67 ± 0.874 . The majority were female (76.2%), with males at 23.8%. In terms of height, most participants were in the 5.0-5.5 range (45.2%). For weight, most fell in the 50-55 kg range (33.3%).

Study results showed During Intra Group analysis of Jacobson Relaxation Techniques (Group A) and JPMR and Quranic Verses (Group B) using Wilcoxon signed rank test with pre-treatment, z -value was -3.825 and p -value was <0.001 having median of 5 in group A and 4 in group B, and post treatment value of z -value was -4.117 and p -value was <0.001 having median of 3 in group A and 2 in group B.

During Across Group Analysis of Jacobson Relaxation Techniques (Group A) and JPMR & Quranic Verses (Group B) Mann Whitney U test was used revealing pre-treatment value of z -value being -0.502 and p -value being 0.616 and post treatment value of z -value being -3.440 and p -value being <0.001 .

Table 1. Data Normality

	Shapiro Wilk Test		
	Statistics	df	Sig.
DASS Pre Test	0.777	42	<0.001
DASS post Test	0.892	42	<0.001

The Shapiro–Wilk test shows both DASS pre-test ($W = 0.777$, $p < 0.001$) and post-test ($W = 0.892$, $p < 0.001$) are not normally distributed.

A total 42 participants' demographic analysis showed that most were aged 18 (54.8%), followed by 19 (28.6%), 20 (11.9%), and 21 (4.8%), with a mean age of 18.67 ± 0.874 . The majority were female (76.2%), with males at 23.8%. In terms of height, most participants were in the 5.0-5.5 feet range (45.2%). For weight, most fell in the 50-55 kg range (33.3%).

Table 2. Demographics of Participants with their Descriptive Statistics (N = 42)

	Character	Frequency	Percentage	SD ± MEAN
Age	18	23	54.8	0.874 ± 18.67
	19	12	28.6	
	20	5	11.9	
	21	2	4.8	
Gender	Male	10	23.8	0.431 ± 1.76
	Female	32	76.2	
Height(ft)	Less than 4.5	2	4.8	1.015 ± 3.428
	4.5-5.0	3	7.1	
	5.0-5.5	19	45.2	
	5.5-6.0	11	26.2	
	6.0-6.5	7	16.7	
Weight	Less than 45	7	16.7	1.353 ± 2.857
	45-50	10	23.8	
	50-55	14	33.3	
	55-60	7	16.7	
	60-65	1	2.4	
	Greater than 65	3	7.1	

Table 3. Depression Anxiety Stress Scale: With in Group Analysis

Groups	Treatment	<i>n</i>	Median	<i>z</i>	<i>p</i>
GROUP A	Pre-Treatment	21	5	-3.825	0.001
	Post-Treatment		3		
GROUP B	Pre-Treatment	21	4	-4.117	0.001
	Post-Treatment		2		

The Within Group analysis of Jacobson Relaxation Techniques (Group A) and JPMR and Quranic Verses (Group B) using Wilcoxon signed rank test with pre-treatment *z*- value was -3.825 and *p*-value was <0.001 having median of 5 in group A and 4 in Group B with post treatment value of *z*-value was -4.117 and *p*-value was <0.001 having median of 3 in group A and 2 in group B.

The across-group analysis of Jacobson Relaxation Techniques (Group A) and JPMR & Quranic Verses (Group B) using Mann Whitney U test

with pre-treatment value of z-value was -0.502 and p-value was 0.616 and post treatment value of z-value was -3.440 and p-value was <0.001.

Table 3. Depression Anxiety Stress Scale: Within Group Analysis

Treatment	Group A		Group B		z	p
	Median ± SD	Interquartile Range	Median ± SD	Interquartile Range		
Pre treatment	5.00 ± 1.03	1.5	4.00 ± 1.14	2.00	-0.502	0.616
Post treatment	3.00 ± 1.283	2.00	2.00 ± 0.813	1.5	-3.440	0.001

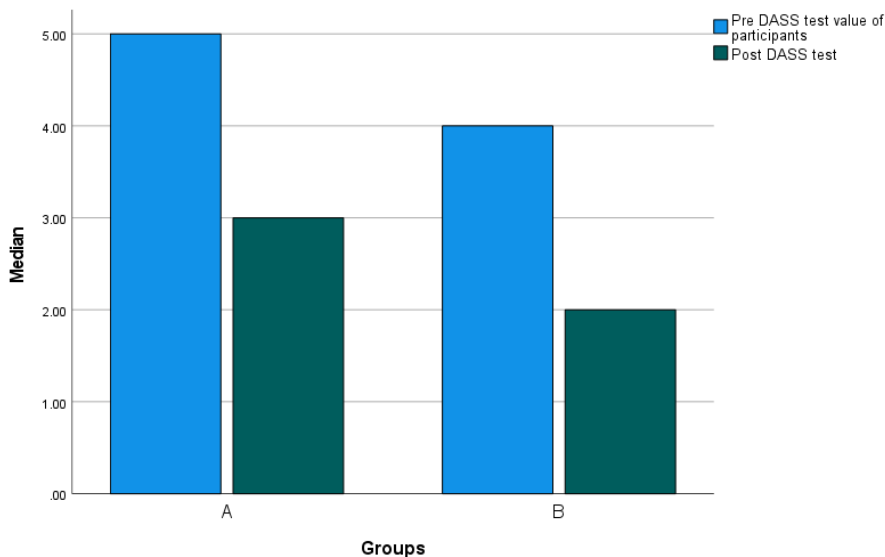


Figure 2. Analytical Graphical Representation

Analytical Graphical Representation of a bar chart comparing the median pre-DASS(A) and post-DASS test(B) values for two groups (A & B).

4. DISCUSSION

The primary objective of this study was to evaluate the comparative efficacy of Quranic Recitation and Jacobson's Progressive Muscle Relaxation (JPMR) in pre-exam anxiety among first-year university students. DASS-21 scale was used to measure anxiety among students. The results demonstrated that while both interventions independently reduced

anxiety levels significantly ($p < 0.001$), but the combined protocol (Group B) was more effective than JPMR alone ($p < 0.001$) in lowering anxiety.

Toqan et al. [11] conducted a study to know the effectiveness of Jacobson successive muscle relaxation (JPMR) techniques on nursing students in reducing anxiety before critical care clinical training. Results had illustrated that the case group had lower score of stress and anxiety than another group. JPMR was found to be very effective in reducing anxiety in nursing students. These results support the results of the current study which elaborates that JPMR has significant effect in reducing anxiety.

Tapeh et al. [23] conducted an experimental objective to know the efficacy of Jacobson Progressive Muscle Relaxation (JPMR) techniques on older adults in reducing anxiety and increasing their happiness in nursing homes. Results had shown that JPMR techniques are very effective in reducing and promoting happiness in older adults. These techniques teach them how to avoid pharmacological interventions. This study concludes that JPMR are effective to reduce anxiety which supports the results of this study.

Jacob et al. [24] conducted an experimental study to evaluate the efficacy of progressive muscle relaxation (PMR) techniques on coping strategies and social control of stress, depression and anxiety. Results revealed that PMR group was found to be more relaxed and convenient than the pharmacotherapy group. This study concluded that PMR techniques are not only effective in treating stress and anxiety but also for coping strategies. These results somehow support our results of JPMR efficacy in reducing anxiety.

Zarea Gavgani et al. [25] conducted a systematic review and meta-analysis on effects of listening to Holy Quran on anxiety reduction in elective surgeries. The research indicates that listening to Quranic Recitation is considered a non-invasive and peaceful intervention in pre-operative anxiety reduction of elective surgeries. This study somehow supports that listening to the Quran reduces anxiety level.

Regarding the spiritual intervention, our results support Latif et al. [26], who carried out a systemic review to examine the efficacy of Quranic Recitation on cardiac and mental performance as well as on anxiety, stress, depression and labor pain. Across all the studies it was evident that the best Non-Pharmacological treatment is listening to the recitation of Quran. As it

calms the person and gives a harmonic effect, it also normalizes the blood pressure and manages the person's anxiety. This study supports that Quranic Verses can reduce anxiety levels during anxiety conditions.

While a systematic review by Ashraf Ghiasi et al. [27] noted that one specific report in their survey found non-significant differences between a recitation group and a control group, the overall consensus of their review, and our current study, strongly support the use of recitation as a therapeutic non-pharmacological treatment. In contrast to that single non-significant report, our study observed a highly significant difference between the JPMR-only group and the combined group ($p < 0.001$), suggesting that the synergy of both methods offers superior relief.

Veni Hadju et al. [28] investigated the effect of listening to the Quran to reduce anxiety in pregnant women. This study shows that there were huge changes in the degree of nervousness subsequent to tuning in. In the meantime, no progressions are seen in the degree of tension in the benchmark group. Paying attention to the recitation of Quran, particularly Surah Al-Rehman, could lessen the nervousness of pregnant ladies in confronting the work cycle. This study supports the results of the current study that Quranic Recitation can be used to relieve anxiety level.

All these studies are performed using Quranic Recitation and JPMR. Each study shows highly significant results of these techniques. These both techniques are not superior to one another but both are very effective in reducing anxiety levels. These studies support results of the current study and assert that these techniques are effective in reducing anxiety level among different populations but Quranic Recitation combined with JPMR is more efficient in reducing anxiety level among a selected population.

4.1. Potential Mechanisms of Action

The superior efficacy of the combined intervention may be attributed to several overlapping physiological and psychological mechanisms. JPMR works primarily by triggering the relaxation response; by systematically tensing and releasing muscles, students reduce peripheral nerve activity and lower physical tension. Simultaneously, Quranic Recitation acts as a form of receptive therapy. The rhythmic and melodious nature of Surah Al-Rehman (as recited by Qari Abdul Basit) may modulate the listener's attention, drawing focus away from academic stressors and toward a calming auditory stimulus. This spiritual connection likely enhances

emotional regulation and promotes a sense of peace that physical relaxation alone may not fully capture.

4.2. Limitations

Despite the significant findings, several limitations must be acknowledged:

- *Sample Size and Sampling:* The study utilized a relatively small sample ($n=42$) and a non-probability convenience sampling technique, which may limit the generalizability of the findings to a broader student population.
- *Study Design:* As a quasi-experimental study, there was a lack of true randomization and blinding, increasing the risk of selection bias.
- *Measurement:* Anxiety levels were assessed using the DASS-21, a self-report measure, which can be subject to social desirability bias.
- *Duration and Adherence:* The study involved a short-term follow-up of four weeks. Additionally, while sessions were supervised at the institute, adherence to potential self-practice outside of these sessions was not strictly monitored.
- *Confounding Factors:* Individual levels of religiosity and spiritual background were not controlled for, which may have influenced the emotional response to the Quranic intervention.

4.3. Conclusion

The result of this study has shown that both JPMR and Quranic Recitation are clinically effective treatment protocols for reducing student anxiety, the results of this study conclude that combining both interventions are significantly more effective than JPMR alone. Specifically, the Group B (Combined) participants achieved a lower post-treatment median anxiety score of 2 compared to Group A with a median of 3.

Author Contribution

Gulzar Ahmad: conceptualization, data collection, formal analysis, investigation, methodology, validation, visualization, writing review & editing. **Fahad Hashmi:** investigation, project administration, resources, visualization, writing original draft.

Conflict of Interest

The authors of the manuscript have no financial or non-financial conflict of interest in the subject matter or materials discussed in this manuscript.

Data Availability Statement

Data supporting the findings of this study will be made available by the corresponding author upon request.

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Generative AI Disclosure Statement

The authors did not use any type of generative artificial intelligence software for this research.

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