

# Impact of Therapeutic Listening Programme On Depression, Anxiety and Stress in Physiotherapy Students

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## Abstract

**Background:** There is increasing concern about the stress in health education and training; especially in medical, dental, nursing and physiotherapy education. Depression is a common and serious medical illness that negatively effects how one feels. Anxiety disorder form a category of mental health diagnosis that lead to excessive nervousness, fear, and worry. Although stress is not necessarily a symptom of anxiety or depressive disorder it can be precursor to these problems.

Accumulated evidence postulated that physiotherapy students' mental health deteriorates because of challenging learning environment and ongoing battle to become certified healthcare providers.

Therapeutic Listening is a skill based intervention that is based on developmental and neurological principles that improves sensory motor functions of a brain by providing stimulation through a structured auditory therapy that uses specially designed music and sound frequencies to influence brain function, emotional regulation and stress reduction.

**Aim Of Study:** To determine the impact of Therapeutic Listening Programme on Depression, Anxiety and Stress in Physiotherapy Students.

**Methodology:** This study included consenting Physiotherapy students from Dr. BR. Ambedkar College of Physiotherapy, Bangalore. Each subject was screened for study inclusion and exclusion criteria and those who did not meet the selection criteria were excluded. The inclusion criteria included both male and female students within the age of 18 – 25 years, with their voluntary consent. A total of 30 participants will be selected. Then, selected 30 participants received the Therapeutic Listening Programme. This intervention was for 30 minute/ session once in a day, 3 days / week for 6 weeks. The Pre and Post Assessment were done using DASS – 21 Questionnaire. Thereafter, results were analysed.

**Result:** The result was found that the therapeutic listening programme significantly reduced depression, anxiety and stress among physiotherapy students. Thirty participants (mean age  $20.8 \pm 1.47$  years)

showed marked improvements, with depression scores decreasing by 4.66, anxiety by 4.07, and stress by 3.87 (all  $p < 0.001$ ).

**Conclusion:** The study concludes that a 6-week therapeutic listening programme significantly reduced depression, anxiety, and stress levels in physiotherapy students, demonstrating its effectiveness as a supportive intervention for mental well-being.

**Keywords:** Physiotherapy students; Depression; Anxiety; Stress; Therapeutic listening.

## 1. Introduction

There is growing concern about stress in the fields of health education, and training, particularly in medical, dental, nursing, and physiotherapy education. While stress itself is not always a sign of anxiety or depressive disorders, it can be a contributing factor to their development. Elevated levels of depression, anxiety, and stress may negatively impact academic performance and the overall curriculum.<sup>1</sup>

Stress, often linked to anxiety and depression, significantly affects students' quality of life and can lead to a decline in academic performance.<sup>2</sup> The sources of stress are diverse and include factors such as academic workload, security and transportation issues, overcrowded classes, faculty strikes, neurotic personality traits, emotion-oriented coping strategies, illness, and emotional challenges.<sup>4</sup> The growing competitiveness and dynamic nature of higher education have intensified the academic pressures faced by physiotherapy students. Evidence suggests that their mental health declines due to the demanding learning environment and the continuous struggle to achieve certification as healthcare professionals. Unfortunately, these students are more prone to experiencing psychological distress, including anxiety, depression, and stress.<sup>4</sup>

Depression, or major depressive disorder, is a widespread and serious medical condition that significantly impacts a person's emotions. It can lead to various emotional and physical challenges, reducing one's ability to function both at work and at home (American Psychiatric Association, 2013). In India, approximately 57 million people, or 18% of the global total, are affected by depression (World Health Organization, Let's Talk Depression, 2017).<sup>1</sup> Depression is a prevalent and serious medical condition that adversely impacts a person's emotions and well-being.<sup>1</sup>

Anxiety disorders are a group of mental health conditions that cause overwhelming nervousness, fear, apprehension, and worry. These disorders affect how individuals process emotions and behave, often resulting in physical symptoms. Ignoring stress and anxiety, or failing to address them promptly, can lead to long-term consequences.<sup>1</sup> Stress is a physical, mental, or emotional response (either internal or external) that creates tension in the body or mind. It is the body's reaction to challenges or demands. In short bursts, stress can be beneficial, like when it helps you avoid danger or meet a deadline.<sup>1</sup>

However, prolonged stress can negatively impact on health. It has been associated with a weakened immune system, increasing the likelihood of illness or affecting the progression of an existing condition.

Chronic stress has also been linked to the development of other health disorders.<sup>1</sup>

Therapeutic listening is an intervention rooted in developmental and neurological principles, aimed at enhancing the brain's sensorimotor functions by providing stimulation through electronically modified music with varying frequency patterns.<sup>3</sup> This stimulation is essential for arousal, control, and modulation of the auditory system. Skills such as attention, sensory integration (SI), social abilities, communication, balance, and spatial awareness are developed while listening to specialized music through headphones.<sup>3</sup>

## NEED OF THE STUDY

The Physiotherapy students experience the sources of stress which are diverse and include factors such as academic workload, security and transportation issues, overcrowded classes, faculty strikes, neurotic personality traits, emotion-oriented coping strategies, illness, and emotional challenges. Evidence suggests that their mental health declines due to the demanding learning environment and the continuous struggle to achieve certification as healthcare professionals. Unfortunately, these students are more prone to experiencing psychological distress. Although Therapeutic listening programme has numerous benefits on various psychological disorders, there is a lack of literary evidence on its impact on Depression, Anxiety and stress in physiotherapy students. Therefore the need for this study arises and helps us to determine how it affects mental health concerns among physiotherapy students.

## HYPOTHESIS

### • NULL HYPOTHESIS:

There will be no significant Impact Of Therapeutic Listening Programme on Depression, Anxiety and Stress in Physiotherapy Students.

### • ALTERNATE HYPOTHESIS:

There will be significant Impact Of Therapeutic Listening Programme on Depression, Anxiety and Stress in Physiotherapy Students.

## METHODOLOGY

**STUDY DESIGN:** Experimental Study

**STUDY SETTING:** Dr. BR Ambedkar College of Physiotherapy, Bangalore

**SAMPLE SIZE:** 30

**SAMPLING METHOD:** Convenient Sampling Method

**MATERIALS USED:** • Smart phones

- Headphones / Earphones



### **CRITERIA FOR SAMPLE SELECTION:**

The participants are selected for the study based on following criteria:

#### **INCLUSION CRITERIA:**

- Voluntary Consent from subjects.
- Both male and female Physiotherapy students
- Age -18 to 25 years
- Subjects whose scores on DASS -21 Questionnaire are as follows:
  - Depression score -  $\geq 10$
  - Anxiety score -  $\geq 8$
  - Stress score -  $\geq 15$

#### **EXCLUSION CRITERIA:**

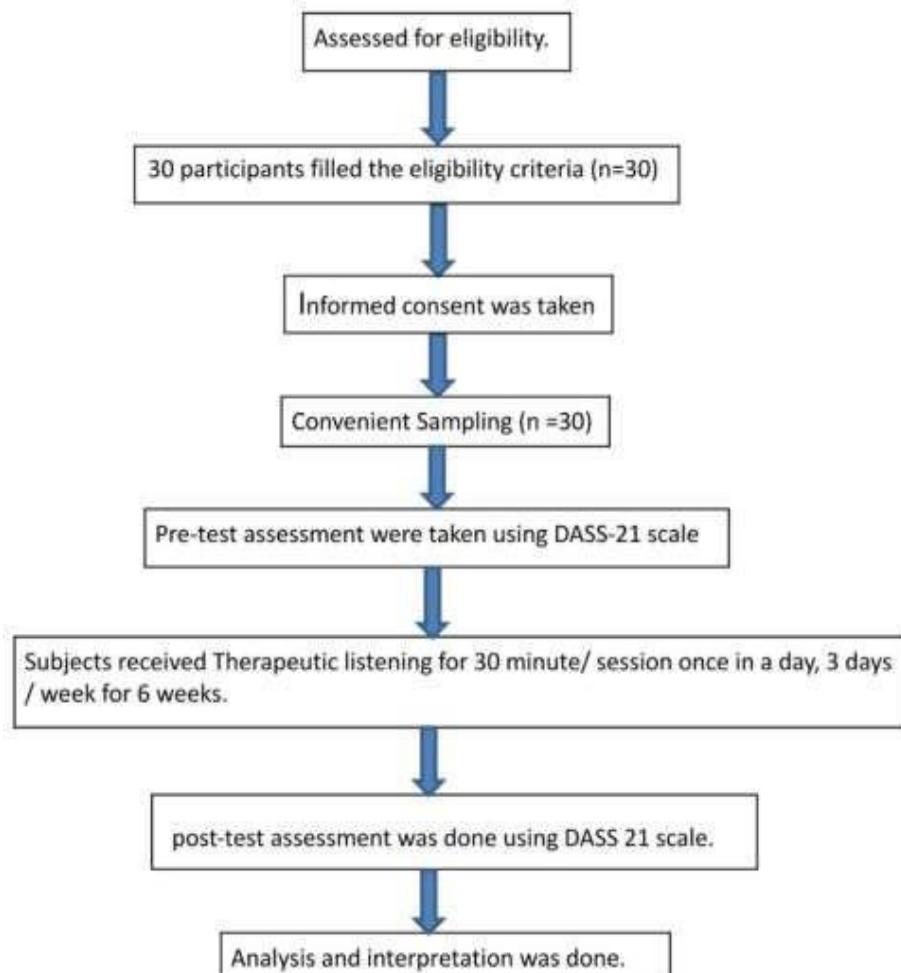
- Subjects not willing to participate
- Subjects with hearing impairments.
- **OUTCOME MEASURES:** Depression, Anxiety and Stress Scale [DASS – 21]

**PROCEDURE:** In this research study, the students from Dr. BR. Ambedkar College of Physiotherapy, Bangalore, were approached for participation. Informed consent was taken from the subjects. Each subject was screened for selection criteria. A total of 30 participants was selected based on selection criteria (Inclusion and Exclusion criteria). Then the selected 30 participants received the Therapeutic Listening Programme. This intervention was carried out for 30 minute/ session once in a day, 3 days / week for 6 weeks. Participants were instructed to avoid activities that required intense focus and that would distract them from listening, such as watching TV or playing video games during listening session. The pre and post assessment was done using DASS – 21 Questionnaire. The results were then statistically analysed.

- Week wise details on Therapeutic Listening Program.

S. N0.	Total Duration	Weeks	Album Title	Dose
1.	3 Weeks	Week 1	Razzberry Jamz	30 min per session once a day, 3 days/ week
		Week 2	Nature Pops	
		Week 3	Early Mozart	
2.	2 Weeks	Week 4	Barboque for modulation	30 min/ session once a day, 3 days/ week
		Week 5	Bach for modulation	
3.	1 Weeks	Week 6	Mozart string #1	30 min/ session once a day, 3 days/ week

## FLOW CHART OF METHODOLOGY



## DATA ANALYSIS

### STATISTICAL ANALYSIS

The statistical analysis was done using SPSS 23.0. The categorical variables were represented in frequency and percentage. Numerical variables were presented using mean and standard deviation. Pre post comparison was done using Paired sample t test. A p value  $<0.05$  was considered statistically significant.

Table 1: Showing Distribution based on age in years

Age	Frequency	Percent
19 years	7	23.3
20 years	8	26.7
21 years	3	10.0
22 years	10	33.3
24 years	2	6.7
Total	30	100.0

The age distribution of the participants is as follows: 23.3% (n = 7) were 19 years old, 26.7% (n = 8) were 20 years old, 10.0% (n = 3) were 21 years old, 33.3% (n = 10) were 22 years old, and 6.7% (n = 2) were 24 years old, making a total of 30 participants. The mean age of the 30 participants was  $20.8 \pm 1.47$  years, with ages ranging from 19 to 24 years

Figure 1: Representation based on age

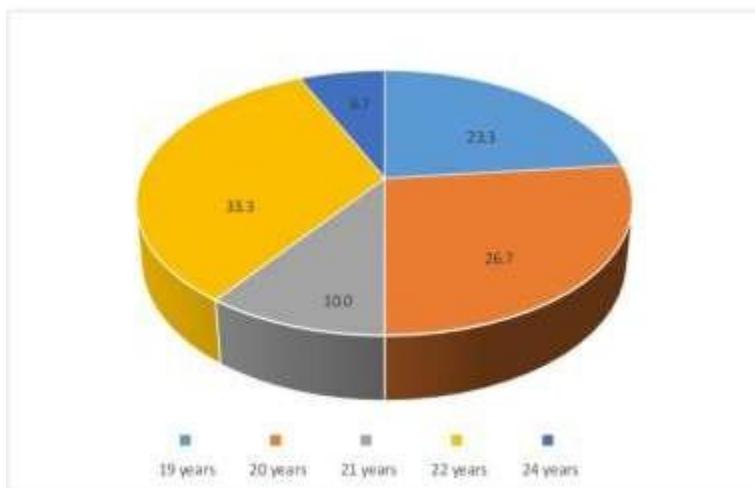


Table 2: Showing distribution based on Gender

Gender	Frequency	Percent
Female	25	83.3
Male	5	16.7
Total	30	100.0

In the present study, the majority of participants were females (83.3%), while males accounted for 16.7% of the study population.

Figure 2: Representation based on gender

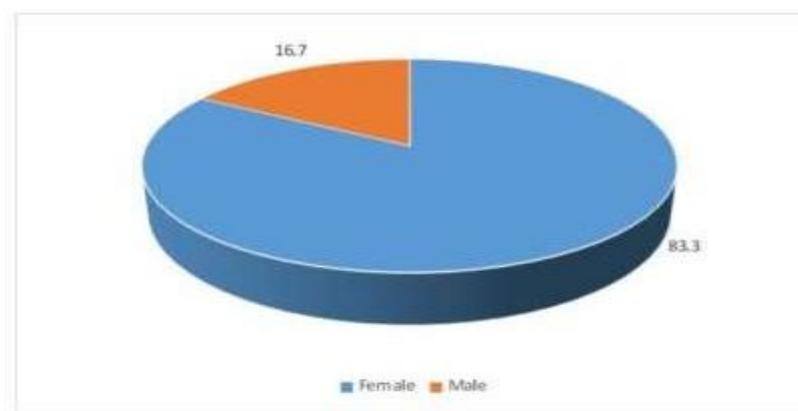


Table 3: Pre post comparison in Depression

		Mean	N	Std. Deviation	Mean difference	t value	p value
Depression	Pre	20.333	30	8.47037	4.66	6.542	$p < 0.001$
	Post	15.667	30	6.64537			

The mean depression score significantly decreased from  $20.33 \pm 8.47$  before the intervention to  $15.67 \pm 6.65$  after the intervention, with a mean difference of 4.66 ( $t = 6.542$ ,  $p < 0.001$ ).

Figure 3: Representation of Depression

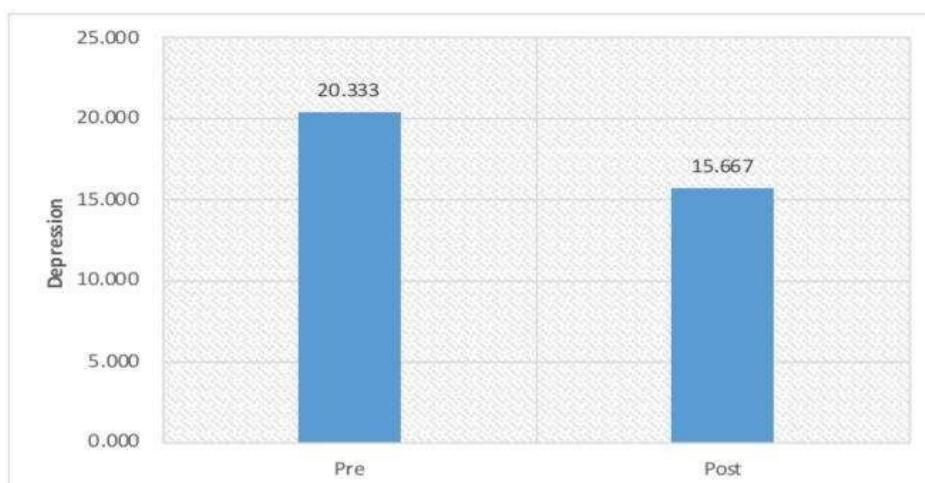


Table 4: Pre post comparison in Anxiety

		Mean	N	Std. Deviation	Mean difference	t value	p value
Anxiety	Pre	20.267	30	6.80230	4.066	6.091	p<0.001
	Post	16.200	30	5.33951			

The mean anxiety score significantly decreased from  $20.27 \pm 6.80$  before the intervention to  $16.20 \pm 5.34$  after the intervention, with a mean difference of 4.07 ( $t = 6.091$ ,  $p < 0.001$ ).

Figure 4: Representation of Anxiety

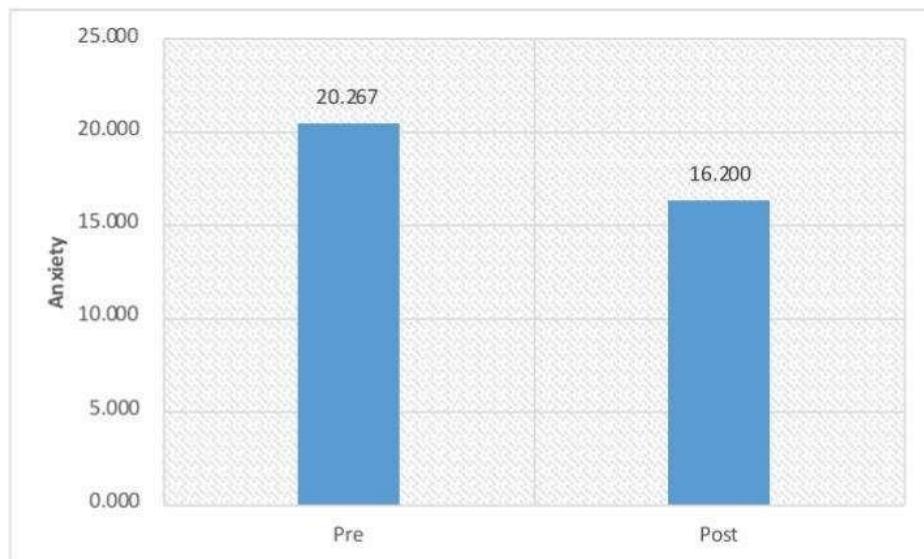
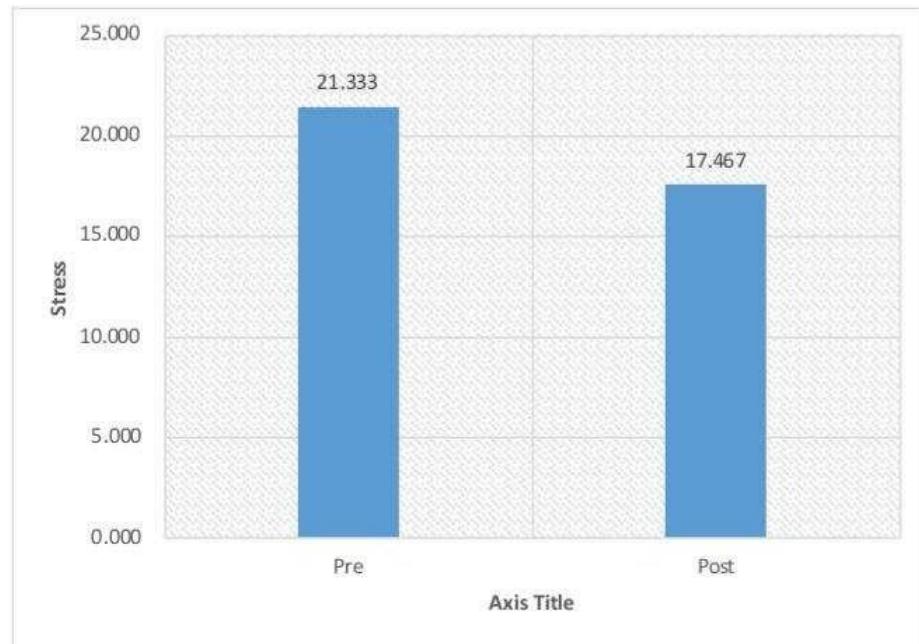


Table 5: Pre post comparison in Stress

		Mean	N	Std. Deviation	3.8667	t value	p value
Stress	Pre	21.333	30	6.37524	3.86	6.381	p<0.001
	Post	17.467	30	5.45662			

The mean stress score significantly decreased from  $21.33 \pm 6.38$  before the intervention to  $17.47 \pm 5.46$  after the intervention, with a mean difference of 3.86 ( $t = 6.381$ ,  $p < 0.001$ ).

Figure 5: Representation of Stress



## Result

The study aimed to investigate the impact of therapeutic listening programme on depression, anxiety and stress in physiotherapy students. In this study, frequencies, mean, standard deviation, t test, analysis were applied with the help of SPSS for the analysis and interpretation of data.

A total of 30 physiotherapy students participated in the study. Among them, 25 (83.3%) were females and 5 (16.7%) were males. The participants' ages ranged from 19 to 24 years, with a mean age of  $20.8 \pm 1.47$  years. The largest proportion were 22 years old (33.3%), followed by 20 years (26.7%), 19 years (23.3%), 21 years (10.0%), and 24 years (6.7%).

The mean depression score significantly reduced from  $20.33 \pm 8.47$  before the intervention to  $15.67 \pm 6.65$  after the intervention. The mean difference was 4.66, which was statistically significant ( $t = 6.542$ ,  $p < 0.001$ ).

The mean anxiety score decreased from  $20.27 \pm 6.80$  at baseline to  $16.20 \pm 5.34$  after the intervention. The mean difference of 4.07 was statistically significant ( $t = 6.091$ ,  $p < 0.001$ ).

The mean stress score reduced from  $21.33 \pm 6.38$  before the intervention to  $17.47 \pm 5.46$  post-intervention. The mean difference was 3.87, which was statistically significant ( $t = 6.381$ ,  $p < 0.001$ ).

The therapeutic listening programme had a significant positive effect in reducing depression, anxiety, and stress levels among physiotherapy students.

## Discussion

This study focuses to determine the impact of a Therapeutic Listening Programme (TLP) on depression, anxiety, and stress among physiotherapy students. Depression is a prevalent and serious medical condition that adversely impacts a person's emotions and well-being.<sup>1</sup> Depression is a common mental disorder, characterized by sadness, loss of interest or pleasure, feelings of guilt or low self-worth, disturbed sleep or appetite, low energy and poor concentration<sup>5</sup>. Anxiety disorders are a group of mental health conditions that cause overwhelming nervousness, fear, apprehension, and worry. Anxiety also causes inability to take decisions as well as lack of confidence which can be detrimental when dealing with patience or even academic performances. Stress is highly prevalent in health-related education, often contributing to poor mental health, reduced academic performance, and emotional difficulties. Physiotherapy students face significant pressure due to their demanding curriculum, making them vulnerable to psychological distress<sup>1</sup>. Therapeutic Listening is a sound-based intervention using electronically modified music to stimulate brain functions, improving attention, sensory integration, emotional regulation, and stress reduction. Although proven beneficial in various psychological conditions, limited research exists on its effects in physiotherapy students, highlighting the need for this study<sup>3</sup>.

This study aimed to assess the impact of therapeutic listening programme on depression, anxiety and stress in physiotherapy students. The findings indicated that after the intervention there was a significant improvement.

In this study, the subjects with depression, anxiety and stress were taken into consideration based on proper inclusion and exclusion criteria. A total of 30 participants were selected based on Selection criteria. Pre- intervention assessment was done using DASS-21 Scale. Then, the selected 30 Participants received the Therapeutic Listening Programme. This Intervention was carried out for 30 minute/ session once in a day, 3 days / Week for 6 weeks. Data analysis was done and results were determined. Statistical data reveals that there is a significant reduction in depression, anxiety and stress in physiotherapy students after the intervention of therapeutic listening programme.

In the present study, the results show the ages of 30 physiotherapy students whose average age was  $20.8 \pm 1.47$  years, with ages ranging from 19 to 24 years. These findings are in line with the study done by Revati Malani et al<sup>1</sup>. Yet another study done by Tarpan Shah et al also shows similar results corresponding to age<sup>2</sup>. These findings are also in line with the study done by Annosha Syed et al<sup>5</sup>. Yet another study done by R. Beiter et al also shows similar results<sup>6</sup>.

In the present study, the majority of participants were females 83.3%, while males accounted for 16.7% with a total of 30 participants. A study done by Noorlila Ahmad et al yields similar results stating prevalence of depression, anxiety and stress is higher in females than in males<sup>11</sup>. Yet another study done by Ivana Lúcia Damásio Moutinho et al shows similar results<sup>12</sup>. Another study done by Annosha Syed et al also yields similar results<sup>5</sup>.

In this present study, The mean depression score significantly decreased from  $20.33 \pm 8.47$  before the intervention to  $15.67 \pm 6.65$  after the intervention, with a mean difference of 4.66 ( $t = 6.542$ ,  $p < 0.001$ ). The mean anxiety score significantly decreased from  $20.27 \pm 6.80$  before the intervention to  $16.20 \pm 5.34$  after the intervention, with a mean difference of 4.07 ( $t = 6.091$ ,  $p$

< 0.001). The mean stress score significantly decreased from  $21.33 \pm 6.38$  before the intervention to  $17.47 \pm 5.46$  after the intervention, with a mean difference of 3.86 ( $t = 6.381$ ,  $p < 0.001$ ). These findings are in line with a study done by Neha Gaur et al which states that the findings of their study revealed that therapeutic listening, delivered through Sennheiser filtering

headphones with traditional music, was effective in improving outcomes among adolescents<sup>3</sup>. The sound based intervention mechanism model given as an auditory stimulus triggering the vestibular system thereby making changes in the brain by addressing the stress, anxiety and depression<sup>3</sup>.

Yet another study done by John Sill-up states that therapeutic listening training positively influences students emotional intelligence by enhancing self-regulation, empathy, and stress management. Such interventions use auditory stimulation to foster emotional balance, thereby improving both academic performance and interpersonal relationships.<sup>13</sup> Yet another study done by Ana Cláudia Mesquita states that therapeutic listening is an effective health intervention strategy for reducing anxiety, stress, and emotional distress across diverse clinical settings<sup>14</sup>.

## Conclusion

This study was done to determine the Impact of therapeutic listening programme on depression, anxiety and stress in physiotherapy students. The subjects were selected based on proper inclusion and exclusion criteria. A total of 30 participants with an inclusion of 25 females and 5 males were in the study. The participants were assessed with using DASS-21 Scale and the intervention was given for 30 minute/session once in a day, 3 days / Week for 6 weeks. After 6 weeks of intervention, the participants were reassessed using the DASS-21 Scale to evaluate their improvement. The statistical data reveals that there is a significant reduction of depression, anxiety and stress in physiotherapy students, proving the alternative hypothesis.

## Limitations

- Sample size was small.
- Duration of study was less.
- Time and Academic Constraints- participation might have been influenced by their academic workload, possibly affecting adherence to the intervention.

## Recommendations

- Extend the study duration.
- Increased the sample size for more reliable findings.
- Integration of advanced assessment tools.
- Conduct follow ups to assess long term effects.

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