Quasi-Experimental Study: Evaluating the Effectiveness of Jacobson Relaxation Techniques on Pain Among Post-COVID Geriatrics with Co-morbid Illness

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KEYWORDS	ABSTRACT
Jacobson's Relaxation Technique, COVID, Pain, geriatrics.	Introduction: Jacobson's progressive muscle has been widely recognized for its potential benefits in pain management, particularly in populations experiencing high levels of stress and anxiety, which are common in post-COVID patients. Objectives: This study aimed to evaluate the effectiveness of Jacobson Relaxation Techniques on pain among post-COVID geriatrics who had co-morbid illness. Methods: Quantitative study was selected for the study. A total of 82 participants were selected using purposive methods allocated to either the intervention group (n=41) or the control group (n=41). Pain levels were assessed using the Numeric Pain Rating Scale (NPRS) at baseline and after a week of intervention. Descriptive statistics and inferential analysis were employed to analyze the data. Results: The study finding revealed that the intervention group had a pre-intervention pain score of 7.2 ± 1.5, which reduced to 4.5 ± 1.2 post-intervention, indicating a noticeable reduction in pain levels following the intervention. In contrast, the control group had a pre-intervention pain score of 7.0 ± 1.4, which showed a minimal reduction to 6.8 ± 1.3 post-intervention, suggesting that the control condition had little to no impact on pain levels. The intervention group demonstrated a significant reduction in pain scores compared to the control group post-intervention ($p < 0.05$), indicating the efficacy of Jacobson Relaxation Techniques in pain management among post-COVID geriatrics with co-morbid illness. Conclusions: Jacobson Relaxation Techniques offer a valuable non-pharmacological approach for alleviating pain in post-COVID geriatrics with co-morbid illness. Further study recommended on the integration of these techniques into clinical practice can improve the quality of life for this vulnerable population, addressing a critical aspect of post-COVID care.

1. Introduction

The COVID-19 pandemic has not only posed significant challenges to global healthcare systems but has also shed light on the vulnerabilities of specific populations, notably older adults with comorbid illnesses. As the pandemic unfolds, post-COVID geriatrics, particularly those with pre-existing health conditions, face a myriad of physical and psychological sequelae that require careful management. Among the persistent symptoms reported by post-COVID geriatrics, pain emerges as a prominent and distressing issue, necessitating effective intervention strategies to alleviate suffering and improve overall well-being (1).

Post-COVID Syndrome and Persistent Symptoms: The clinical picture of post-COVID syndrome is complex, as it is defined by persistent symptoms that develop after an acute COVID-19 infection. Older adults, in particular, may experience prolonged fatigue, dyspnea, cognitive impairment, and pain, which can significantly impair their functional status and quality of life (2).

Pain is a prevalent symptom among post-COVID geriatrics, with studies reporting rates ranging from 20% to 50% in this population (3). Chronic pain not only affects physical function but also contributes to psychological distress, impaired social functioning, and decreased quality of life (4).

Pain management in post-COVID geriatrics with comorbid illnesses presents unique challenges. Conventional pharmacological treatments may be limited due to concerns about polypharmacy, drug interactions, and adverse effects, highlighting the need for alternative, non-pharmacological approaches (5).

Non-pharmacological interventions, such as relaxation techniques, offer a promising avenue for pain management in older adults with comorbid illnesses. Jacobson Relaxation Techniques (JRT), which include progressive muscle relaxation and deep breathing exercises, have been shown to reduce pain intensity and improve overall well-being in various populations (6).

Research indicates that relaxation techniques, including progressive muscle relaxation, can effectively reduce pain perception and improve psychological well-being. For instance, a systematic review by Whale et al. discusses the effectiveness of psychological interventions, including relaxation techniques, in improving pain

outcomes post-surgery, suggesting that these methods can be beneficial in managing pain in older adults following significant health events such as COVID-19 (7).

Additionally, the study by Montero-Marín et al. supports the notion that relaxation therapies can serve as effective adjuncts to traditional pain management strategies, particularly in patients with anxiety disorders (8).

In light of these considerations, this study aims to address the research gap by conducting a study to evaluate the efficacy of Jacobson Relaxation Techniques (JRT) on pain among post-COVID geriatrics. By providing empirical evidence on the efficacy of JRT in this population, this study seeks to inform clinical practice and improve the quality of care for post-COVID geriatrics experiencing pain and associated comorbidities.

2. Aim

This study aimed to evaluate the effectiveness of Jacobson Relaxation Techniques on pain among post-COVID geriatrics who had co-morbid illness.

3. Methods

A purposive sample of post-COVID geriatric individuals (aged 60 years and older) with co-morbid conditions who report pain is recruited for the study. The sample size is 82, with 41 participants in the intervention group and 1 in the control group. Post-COVID-19 individuals aged 60 years or older with co-morbid illnesses, those who are willing to participate in the study, and those who are proficient in English and Tamil comprised the inclusion criteria. The exclusion criteria were geriatrics with Cognitive impairment affecting participation in relaxation techniques, Inability to comprehend instructions. The tools include section – A socio demographic variables and section – B. Numeric Pain Rating Scale. This tool indicates the present pain intensity, along with the highest and lowest levels encountered in the preceding 24 hours. The instrument has sufficient reliability and validity.

Upon receiving ethical approval, qualified people are encouraged to engage willingly. All participants provided informed consent. Baseline assessment: Participants' demographic information, medical history, and baseline pain intensity will be recorded. Pain intensity using the Numeric Pain Rating Scale was measured before the intervention for intervention and control group.

The Jacobson relaxation techniques intervention was administered to participants from the intervention group. Trained facilitators taught the Jacobson relaxation techniques to the participants in a group setting. The facilitators instruct the participants to practice the relaxation techniques daily for a specified duration (e.g., 20 minutes) over a period of 1 week. Similarly, Participants in the control group will receive standard care for pain management. Pain was assessed for both the groups after one week. Data collection was conducted through face-to-face interviews, and where necessary, follow-up calls or visits are arranged.

Descriptive statistics were employed to encapsulate the demographic attributes of the participants. Utilized paired t-tests to assess differences in pain levels before and after the intervention. The significance threshold was established at $p < 0.05$.

4. Results

Table 1 revealed that the majority of participants in both the intervention and control groups were aged 71–75 years and 60–65 years, respectively. Most participants were married, living in nuclear families, and had secondary education. The primary source of income was pensions, and hypertension was the most common comorbid illness across both groups. Additionally, the sex distribution was relatively balanced between males and females.

Table 1: Demographic variables of the participants. (n=82)

Variables	Intervention group Frequency (%) n=41	Control group Frequency (%) n=41
AGE		
60-65	8 (19.5%)	12(29.3 %)
66-70	10 (24.4%)	10(24.4%)
71-75	12 (29.3%)	7(17.1%)
76-80	7 (17.1%)	3 (7.3%)
81-85	3 (7.3%)	1 (2.4%)
86 and above	1 (2.4%)	1 (2.4%)
GENDER		

Male	20 (48.8%)	22 (53.7%)
Female	21 (51.2%)	19 (46.3%)
MARITAL STATUS		
Married	35 (85.4%)	33 (80.5%)
Single	3 (7.3%)	4 (9.8%)
Widowed	3 (7.3%)	4 (9.8%)
TYPE OF FAMILY		
Nuclear	28 (68.3%)	25 (61.0%)
Joint	13 (31.7%)	16 (39.0%)
EDUCATIONAL STATUS		
Illiterate	5 (12.2%)	6 (14.6%)
Primary	10 (24.4%)	8 (19.5%)
Secondary	15 (36.6%)	14 (34.1%)
Higher Secondary	6 (14.6%)	7 (17.1%)
Graduate and above	5 (12.2%)	6 (14.6%)
SOURCE OF INCOME		
Pension	20 (48.8%)	18 (43.9%)
Family Support	10 (24.4%)	12 (29.3%)
Employment	5 (12.2%)	6 (14.6%)
Other	6 (14.6%)	5 (12.2%)
COMORBID ILLNESS		
Hypertension	30 (73.2%)	28 (68.3%)
Diabetes Mellitus	20 (48.8%)	18 (43.9%)
Arthritis	15 (36.6%)	17 (41.5%)
Other	10 (24.4%)	11 (26.8%)

Table 2 presents a comparison of pre- and post-intervention pain scores for both intervention and control groups (n=82). The mean pre-intervention pain score for the intervention group was 7.2 ± 1.5, which decreased significantly to 4.5 ± 1.2 following the intervention, with an independent t-test yielding a p-value of < 0.001, indicating a statistically significant reduction in pain levels. Conversely, the control group exhibited a minimal change in pain scores, with a pre-intervention mean of 7.0 ± 1.4 and a post-intervention score of 6.8 ± 1.3, which did not reach statistical significance. These findings highlight the effectiveness of the intervention in reducing pain compared to the control, as evidenced by the significant p-value ($p < 0.05$)

Table 2: Comparison between the pre and post intervention pain scores. (n=82)

Group	Pre intervention pain score Mean $\pm$ SD	Post intervention pain score Mean $\pm$ SD	Independent t-test
Intervention	7.2 ± 1.5	4.5 ± 1.2	
Control	7.0 ± 1.4	6.8 ± 1.3	P <0.001**

**Significant at p<0.05

5. Discussion

The findings of this quasi-experimental study suggest that Jacobson Relaxation Techniques (JRT) may offer a promising approach to reducing pain among post-COVID geriatrics with comorbid illnesses. Participants who received the JRT intervention demonstrated a significant reduction in pain intensity at post-intervention and at follow-up compared to pre-intervention. This aligns with previous research indicating the efficacy of relaxation techniques in managing pain in various populations (9).

The mechanism through which Jacobson relaxation techniques exert their effects on pain may be multifaceted. PMR promotes awareness of muscle tension and relaxation, which can lead to a reduction in physical discomfort and an overall sense of calm. This aligns with the findings of Kwekkeboom and Bratzke (2016), who noted that relaxation techniques can effectively reduce symptom distress in patients with chronic conditions (10).

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