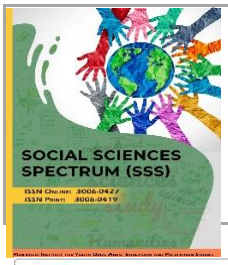

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Unwinding the Mind and Body: Evaluating Progressive Muscle Relaxation for Insomnia and Fatigue in University Students with Psychosomatic Complaints

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Abstract

The present research sought to investigate whether Progressive Muscle Relaxation (PMR) training had significant therapeutic impact on somatic symptoms, insomnia, and fatigue within the undergraduate cohort. The current research hypothesized that Progressive Muscle Relaxation training will show a statistically significant contrast in the scores obtained on scales measuring psychosomatic symptoms, insomnia, and fatigue among the within group for the pre-intervention and post-intervention test scores. The study sample, which was constituted of n=313 undergraduate university students currently enrolled in the public sector university in Peshawar, KPK. The mean age range of the students present in the study sample was between 18 and 30 years old (M=1.52, SD=5.31). From the cohort of 313 students, 21 of the said students were placed in the group on whom PMR was to be administered. The therapeutic training was opted to be 6 weeks long. The Somatic Symptom Scale-8, the Regensburg's Insomnia Scale, and the Fatigue Assessment Scale were applied to the experimental group to appraise the level of severity reduction in study variables. The various statistical tests employed for analysis of study results comprised of the Pearson Product-Moment Correlation, the Wilcoxon Signed-Rank Test, and Simple Linear Regression were used. The results showed that Progressive Muscle Relaxation showed a significant reduction in scores across all variables. The regression model demonstrated that somatic symptoms were a key predictor of both insomnia and fatigue.

Keywords: Somatic Symptoms, Insomnia, Fatigue, Progressive Muscle Relaxation, University Students.

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Introduction

Somatic Symptoms

Arthur Kleinman (1967), in transcultural psychiatry, introduced the concept of *somatization* in an attempt to describe how social and psychological distress may manifest as or be translated as physical complaints. Modern diagnostic and clinical frameworks refer to these manifestations as somatic symptoms.The APA dictionary of Psychology defines them as one or a collection of bodily symptoms (for instance pain) that may cause distress or inhibited day-to-day functioning. Similarly, in the earlier times, only medically unexplainable symptoms were considered in this class, however, DSM-V now acknowledges both medically explained and unexplained somatic symptoms.

Although most somatic symptoms tend to be short-lived or cause minimal disruption in daily functioning, however, in a few cases, these symptoms might escalate into being more debilitating or manifest as somatoform pathology, which are linked with severe impairment and hospital admission. Moreover, the presence of somatic symptoms has been reported in numerous studies to be able to complicate or precipitate the pathogenesis of comorbid mental illnesses (Mewes, 2022).

Insomnia and Somatic Symptoms

Sleep-related difficulties are considered to be the characteristic of individuals who generally present with somatic complaints. Although there is a great sparsity in the existing literature addressing the broader link between insomnia and somatic symptoms, yet individuals presenting with persistent psychogenic pain, who in turn experience greater somatic difficulties, tend to suffer more greatly with insomnia and related problems than those individuals who do not present with pain (or other somatic symptoms). This association often exhibits a far greater level of insomniac symptomatology, a relatively poorer sleep routine, a heightened level of arousal before sleep onset, and a greater difficulty in adhering to bedtime schedules, which altogether greatly comprises psycho-social wellbeing. While it is widely within the literature that these insomnia complaints are widespread in pain populations, still a limited empirical evidence exists to scientifically establish the exact relationship between insomnia and somatic symptoms (Valrie et al., 2013).

Nordin et al. (2021) in their study concluded that a positive association between insomnia and psychosomatic symptoms was found. Stomach issues, back aches, digestive issues, and light-headedness were the most significantly correlated somatic symptoms with sleep disturbance. Likewise, for each additional somatic symptom, a 1.44-fold elevation in the risk for developing insomnia was observed.

Fatigue and Somatic Symptoms

A substantial body of literature exists to point out the relationship between somatic symptoms and fatigue in individuals, most of which highlights the multidimensional contributions of all the biopsychosocial variables altogether. According to Liu et al. (2019), dysregulations within the serotonergic and noradrenergic systems might be central to the onset of somatic symptoms and fatigue by interfering with the normal neural communication. This dysregulated neural communication is believed to produce continuous experience of physical distress and fatigue, thereby maintaining the perpetual cycle of somatic symptoms and fatigue. Individuals with concurrent somatic difficulties and complaints of fatigue are the prime example of this psycho-physiological overlap.

Similarly, a study by Abbass et al. (2021) indicate that extended periods of experiencing fatigue can exacerbate somatic symptoms in individuals substantially, particularly those involving muscular and gastrointestinal systems. This interaction between somatic symptoms and fatigue can further compromise functioning, especially in conditions when individuals are undergoing a notably stressful time or lack adequate support systems.

Henningsen et al. (2023) further noted that in cases when individuals respond to the fatigue with excessive rest and constant inactivity, the result might include diminished physical endurance, further aggravating somatic complaints. This reciprocal correspondence between fatigue and somatic symptoms suggests that managing the symptoms of fatigue and somatic difficulties simultaneously is vital for actual improvement in overall health and well-being. Their findings further suggest the need for holistic and multidimensional approaches that simultaneously promote physiological conditioning and psychological endurance.

Fatigue and Insomnia

There is substantial scientific evidence that evince the occurrence of a direct proportionality between fatigue and sleep disorders, particularly insomnia disorder. Findings by Gates et al. (2018b) suggest a strong mutual reciprocity between the co-occurrence of insomniac and fatigue symptoms. Some of the common symptoms linked to fatigue, such as concentration problems, lack of initiative, and irritability were substantially correlated to insomnia. Moreover, findings from a large number of studies indicate that when fatigue and insomnia coexist, they serve as a key predictor of subsequent psychological problems.

A notable sparsity of literature aiming to explore the phenomenological experience of fatigue in individuals reporting insomnia, and the nuanced relationship between fatigue and insomnia exists. One of the possible explanations for this literature gap, as noted already by a few researchers, might be the prevailing assumption that fatigue is merely a negative consequence of insomnia (Fortier-Brochu et al., 2010), since there are a number of studies which report that compared to individuals who do not exhibit insomnia, those with diagnosed insomnia tend to experience substantially higher levels of fatigue and tiredness. Evidence from these studies suggests the presence of a concurrent association between insomnia and fatigue (Harris et al., 2020).

Progressive Muscle Relaxation (PMR)

Formulated by Dr. Edmund Jacobson during the 1920s, Progressive Muscle Relaxation (PMR) is a physically engaging relaxation technique employed to reduce muscular tension and promote calmness. It entails progressive turn-by-turn tensing or contracting and relaxing of each muscle group in the body so as to produce an effect of relaxation. Furthermore, during the course of intervention, the practitioner urges the individual to coordinate systemic deep breathing such that deep inhalation is coordinated with muscle tension and deep exhalation is coordinated with muscle relaxation. The objective of this technique, hence, is to enable the individual to be mindful of and differentiate between the alternate sensations of tension versus relaxation of muscles in the body. As a result, individuals not only attain a profound state of physiological relaxation but also gain psychological advantages concerning the positive therapeutic outcomes (Jyothimol & Lobo, 2020). The exercise is continued until the individuals gain a complete state of physiological and psychological relaxation. PMR functions to synchronize both the “top-down” cognitive control with the “bottom-up” sensory feedback. What this means is that this technique causes two mechanisms to co-occur simultaneously; while the cortical and cerebellar regions help the individual in voluntarily tensing and relaxing the muscle groups “down”, the proprioceptive

feedback from peripheral nerves go “up” to the brain to modulate relaxation response. A simultaneous stimulation of both these neural processes is actually the reason why PMR is able to bring about a state of relaxation effectively (Keptner et al., 2020).

Progressive Muscle Relaxation for Somatic Symptoms

Progressive Muscle Relaxation is already known in the literature to be able to successfully bring about reduction in the severity of psychogenic problems. Most of the somatic symptoms that are believed to be caused by psychological distress can be managed with appropriate muscle relaxation techniques like PMR. This relaxation is brought about by making the individual consciously aware of the sensations arising in their muscles when prompted to relax and strain under controlled conditions. The consequence of this exercise is evident in the noticeable diminution of stress present in the body, specifically discerned in cardiovascular and hormonal responses. These responses are generally identified to be quite elevated in individuals experiencing psychosomatic problems. (Norelli et al., 2023).

Among the numerous types of psychogenic problems, the vast literature indicates a successful utilization of PMR to mitigate somatic concerns like headache, muscle ache and digestive issues. Apart from actually reducing the physical pain in muscles, PMR has also been evidenced to reduce the maladaptive perceptions related with somatic concerns, hence not only working on the physical aspect of the problem but also helping with the cognitive aspect of experiencing pain. In this regard, some research indicates that regularly conducting exhibits much positive and long-term therapeutic effects, even more so than expected. (Taylor et al., 2021). One of the possible reasons this could be the case is that PMR not only helps with alleviating the current painful sensations, but also with tackling what one expects regarding the pain in future.

Progressive Muscle Relaxation for Insomnia

PMR has already been proven to be quite efficacious in managing sleep problems, specifically those pertinent to heightened physiological and psychological arousal, as a non-invasive and relatively easier-to-administer method. An augmented alertness in the nervous system is reputed to be a major factor towards developing insomnia, which, PMR attempts to neutralize by inducing relaxation in muscles, and in turn, the mind. Furthermore, the accentuation of each specific muscle group under awareness tends to divert the attention from the problem, which likewise dilutes the ruminating thoughts, hence further amplifying the quality of sleep (Garland et al., 2019).

The efficacy of PMR in handling insomnia and sleep-related issues is ample and extensive. PMR has been illustrated to successfully pare down the sleep latency, resulting in a faster onset of sleep, as indicated by Harorani et al. (2019). Moreover, similar to sleep onset, PMR has also demonstrated great efficacy in the enhancement of total sleep duration, which was previously experienced by individuals in the form of constantly waking up, oftentimes due to anxiety and consequent muscle tension. The sympathetic nervous system of the body is caused to relax, which reduces the fight-or-flight response, generally responsible for the heightened alertness in individuals.

Progressive Muscle Relaxation for Fatigue

A large number of studies have established that PMR is clinically efficacious in handling fatigue, generally aggravated by burnout, chronic stress, and constant alertness. This fatigue is palpable in not only a physical, but also in a psychological manner. PMR facilitates individuals by not only attenuating physical tension but also by tapering down the associated psychological stress by providing a controlled channel as an outlet, which can deplete energy (Zargarani et al., 2018).

Abundant amounts of psychological literature identify PMR as a successful non-pharmacological treatment method for fatigue. In their study, Sajadi et al. (2024) validated the fact that individuals regularly engaging in PMR training tend to feel invigorated and complain less of fatigue, particularly in cases where stress and tension were the leading causes of fatigue. By calming down the sympathetic nervous system of the individuals, PMR enables the body to restock on its reserves of energy available. The stress hormone, Cortisol, is also demonstrated to be significantly lower in individuals who regularly administer PMR. Similarly, PMR helps the body to sustain itself and its energy reserves for much longer by slashing the constant stress and arousal, hence promoting long-term health benefits (Sajadi et al., 2024).

Objectives

1. To evaluate the therapeutic impact of Progressive Muscle Relaxation (PMR) in alleviating psychosomatic symptoms, insomnia, and fatigue among undergraduate students
2. To determine the role of psychosomatic symptoms in predicting insomnia and fatigue among undergraduate students.

Hypotheses

H1: Undergraduate students who receive Progressive Muscle Relaxation (PMR) training will report significantly lower levels of somatic symptoms, insomnia, and fatigue.

H2: Somatic symptoms will be a significant positive predictor of insomnia and fatigue among undergraduate students.

Research Methodology

Research Design

The present study utilised a randomized control trial design to assess the therapeutic impact of Progressive Muscle Relaxation (PMR) in alleviating somatic symptoms, insomnia, and fatigue among a university student cohort. Treatment outcome was determined by measurements collected at baseline and after completion of the intervention.

Sample Size

Out of a total of 1600 university student population, Raosoft was used to calculate the sample size, which was found to be, at a 95% confidence interval, as n=313. The study sample (n=310) was drawn via the random sampling technique, comprising of students enrolled at a government university in Peshawar, KPK. The range of age of study participants was from 18 years to 30 years with (M=1.52, S. D=0.531). A total of n=42 students were drawn from the pool of 313 study sample, who were identified as eligible based on the screening results using the SSS-8, RIS, and FAS. Twenty-one of these participants were allocated in the PMR experimental group, with n=19 completing the intervention till the end.

Inclusion Criteria

- Only the students obtaining a score of 13 or above on the SSS-8 were deemed suitable to be included in the current study.
- Only the students obtaining a score of 13 or above on the RIS were deemed suitable to be included in the current study.
- Participants were limited to those students actively enrolled in the Bachelor of Science (BS) program in the university.

- The present study recruited only the students with ages ranging from 18 to 30 years.

Exclusion Criteria

- Individuals with either current or past psychiatric diagnoses were excluded from participation in the study.
- The present study excluded students currently on psychotropic medical treatments for any of the study variables so as to minimize interference with the study outcomes.
- Individuals receiving concurrent psychotherapeutic interventions for any of the study variables were barred from inclusion so as to minimize interference with the study outcomes.

Instruments

Demographic survey

A demographic survey questionnaire was given to the participants so as to obtain information regarding their socio-demographic attributes including their ages, genders, class/field of study, economic background, familial systems, and permission questions regarding their consensual participation.

Somatic Symptom Scale-8 (SSS-8)

Developed as a shortened version of the PHQ - 15, the Somatic Symptom Scale-8 (SSS-8) was developed to quantify the first diagnostic criteria of Somatic Symptom Disorder in the DSM-5 (Gierk et al., 2014). This scale has a total of 8 items used to specifically investigate the intensity levels of digestion-related issues, backache, bodyache, head-ache, pain in the chest region, lightheadedness, fatigue, and insomnia. Responses are rated on a 5 point Likert scale ranging from 0 to 4, with each representing increasing degrees of acceptance (Gierk et al., 2014). Clinically significant level of intensity of symptoms is defined as a score of 13 or above. A $\alpha = 0.81$ indicates high internal consistency.

Regensburg's Insomnia Scale (RIS)

For the purpose of assessing the intensity of sleep onset and maintenance problems, Cronlein et al. (2013) introduced the Regensburg Insomnia Scale. It is a 10 items self-appraisal inventory that examines the conceptual, affective, and functioning dimensions of insomnia. A 5 point Likert scale is employed by this instrument to record responses with options citing increasing levels of endorsement from 1 to 5. The 9th item is transposed. A score of 13 is taken as a cutoff score, and therefore, any total score ranging equal to or higher than 13 refers to clinically pathological level of insomnia (Crönlein et al., 2013). The internal consistency coefficient of this scale is 0.66.

Fatigue Assessment Scale (FAS)

The 10-item FAS, introduced by Michielsen and colleagues (2003), was utilised in the present study to measure all aspects of fatigue as a single construct i.e., combining the physiological and psychological aspects of fatigue (Michielsen et al., 2003). Responses are recorded on a 5 point Likert scale, from 1 to 5 wherein the options capture the gradation of fatigue frequency. There is reverse scoring on the 4th and 10th item. The internal consistency coefficient of this scale is 0.80.

Procedure

At the outset of the study, information pertaining to the totality of registered pupils in the Bachelor of Science (BS) degree of the university was obtained from the Director of Admissions. The information so received indicated the presence of 22 faculties/departments within the university,

and a lottery method was employed to randomly select any six of those, resulting in the study sample amounting to a total of 1600 pupils in the selected departments.

Thereafter, the sitting chairmen of all of the chosen departments were formally requested to sign permission letters to approve data collection from their corresponding departments. Following this, the systematic random sampling technique was used to draw out the screening sample by selecting every second student from the class registry, which totalled n=313, as calculated by the Raosoft calculator. For the screening procedure, the 313 students were asked to carefully fill the SSS-8, RIS, and FAS to obtain baseline scores.

Upon completion of the screening phase, 257 ineligible participants and 14 those unwilling to participate were barred from the process and the remaining (n=42) participants received a comprehensive consent form detailing all the technical information as well as any potential harm and advantages and data confidentiality was thoroughly discussed. Once the consent forms were signed after due careful review, using the block randomization method, n=21 participants were designated to the PMR experimental group and the intervention sessions were commenced.

Progressive Muscle Relaxation

PMR was conducted as a group intervention with a total of 6 sessions conducted twice a week. The participants were allocated into two groups of 10 individuals each. The sessions were 30-45 minutes long.

First Session

The first session consisted of an introduction and a detailed overview of PMR, as well as a physical demonstration of the relaxation exercise.

Session 2nd - 5th

Subsequent sessions consisted of repeated practice of the PMR by participants in supervision of the instructor, with their focus being directed towards straining and relaxing muscle group.

Session 6

The last session included feedback, evaluation and assessment, and debriefing about the study.

Results

Table 1: *Sociodemographic Characteristics of the Participants*

Variables	N	%
Age		
18-20	153	48%
21-25	153	48%
26-30	5	1.6%
Gender		
Male	159	50%
Female	154	49%
Education		
Semester 1	61	19%
Semester 4	113	36%
Semester 6	92	29%
Semester 8	47	15%
Department		
Psychology	89	28%
Chemistry	43	13%
Political Science	46	14%
Economics	34	10%
Botany	41	13%
Computer Science	60	19%
Marital Status		
Single	285	91%
Married	28	8.6%
Socioeconomic Status		
Lower	14	4.5%
Middle	276	88%
Upper	22	7%
Family System		
Joint	161	52%
Nuclear	152	48%

Table 1 shows the key sociodemographic attributes of the total sample, displaying both the frequency (N) and percentage (%) for each attribute.

Table 2: *Alpha Reliability of the Study Variables*

Scale	Mean	Standard Deviation	Range	Cronbach's Alpha
SSS	9.27	6.84	0-29	.806
RIS	14.20	6.23	1-32	.664
FAS	24.91	6.35	10-45	.663

Note: SSS= Somatic Symptoms Scale-8, RIS= Regensburg's Insomnia Scale, FAS= Fatigue Assessment Scale

The psychometric properties of the key study variables are evaluated in Table 2. The SSS (8 items) indicates a good reliability (M=9.27, SD=6.84) whereas RIS and FAS has shown a moderate reliability, having 10 items each (M=14.20, SD=6.23), (M=24.91, SD=6.35) with alpha coefficients of .66 and .80 respectively.

Table 3: *Correlation Analysis and Descriptive Data for Key Study Variables*

Variable	Mean	Standard Deviation	1	2	3	4
Gender	1.49	.501	-			
SSS	9.27	6.84	.382**	-		
RIS	14.20	6.23	-.111*	.343**	-	
FAS	24.91	6.35	.142*	.426**	.322**	-

Note: SSS= Somatic Symptoms Scale-8, RIS= Regensburg's Insomnia Scale, FAS= Fatigue Assessment Scale

Table 3 presents the Pearson correlations among the three study variables. The findings suggest that Somatic symptoms (SSS) have positive associations with both Insomnia (RIS) ($r=.343$, $p<0.01$) and Fatigue (FAS) ($r=.426$, $p<0.01$), representing that a greater score on SSS will inevitably cause a higher score on RIS and FAS. Apart from this, the other two study variables, FAS and RIS are also positively correlated to one another ($r=.322$, $p<0.01$), which means that if one is reported greatly, the other will follow suit. There was a very weak association of gender with the study variables, meaning there were no significant gender differences as shown by the following: SSS ($r=.322$, $p<0.01$), FAS ($r=.142$, $p<0.05$), and RIS ($r= -.111$, $p<0.05$).

Table 4: *Mean Comparison of Pre-intervention and Post-intervention on Somatic Symptom Scale-8, Regensburg's Insomnia Scale, and Fatigue Assessment Scale of Progressive Muscle Relaxation Group (n=19)*

Variable	Pre-intervention		Post-intervention		Z	P	r*
	M	SD	M	SD			
SSS	17.89	4.18	11.32	3.69	3.83	< .001	0.6
RIS	19.32	5.20	14.11	3.41	3.41	< .001	0.55
FAS	32.36	6.11	26.32	4.95	3.10	< .001	0.50

Note: SSS= Somatic Symptom Scale-8, RIS= Regensburg's Insomnia Scale, FAS= Fatigue Assessment Scale, r= effect size of Wilcoxon signed-rank test.

P< .001***

The Wilcoxon Signed-Rank test was performed to analyze the therapeutic impact of PMR before and after the intervention conduction. As evident in Table 4, a major diminution was reported in the severity of somatic symptoms ($z=3.83$, $p<0.001$), insomnia ($z=3.41$, $p<0.001$), and fatigue ($z=3.10$, $p<0.001$). Rank analysis indicates the absence of any positive ranks (N=0), meaning that in none of the cases was the post-test score increased as compared to the pre-test scores. Conversely, the rank analysis indicates the presence of 19 negative ranks (N=19), meaning that in all of the cases were the post-test scores reduced as compared to the pre-test scores. The study outcomes suggest that PMR has a significant therapeutic impact on reducing the intensity of all the study variables, namely, somatic symptoms, insomnia, and fatigue.

Table 5: *Regression Coefficient of Somatic Symptoms Scale-8 on Regensburg's Insomnia Scale*

Variable	B	ß	SE
Constant	11.29***	-	.599
SSS	.313***	.049	.343
R_2	.118		
ΔR_2	.118		

Note: SSS= Somatic Symptom Scale-8, RIS= Regensburg's Insomnia Scale.

P<.001***

Simple linear regression was conducted to examine the predictive role of somatic symptoms in the onset of insomnia (RIS) among the cohort. The findings from Table 5 suggest that somatic symptoms significantly predicted around 11.8% of the variance in insomnia ($R^2=.118$, $F(1,311)=41.51$, $p<.001$). SSS emerged as a significant predictor of RIS with a ß of .049 ($p<.001$).

Table 6: *Regression Coefficient of Somatic Symptoms Scale-8 on Fatigue Assessment Scale*

Variable	B	ß	SE
Constant	21.26***	-	.555
SSS	.391***	.420	.048
R_2	.176		
ΔR_2	.176		

Note: SSS= Somatic Symptom Scale-8, FAS= Fatigue Assessment Scale

P<.001

Simple linear regression was conducted to examine the predictive role of somatic symptoms in the onset of fatigue among the cohort. The findings from Table 6 suggest that somatic symptoms significantly predicted around 17.6% of the variance in fatigue (R^2=.176, F (1,309) =61.11, p<.001). SSS emerged as a significant predictor of RIS with a ß of .420 (p<.001).

Discussion

The foundational aim of the current study was to analyze the therapeutic impact of Progressive Muscle Relaxation (PMR) in alleviating psychosomatic symptoms, insomnia, and fatigue among undergraduate student's cohort.

The first objective of the current research was to quantify the frequency and distribution of psychosomatic symptom complaints, insomnia, and fatigue in a university student cohort. Descriptive analysis of the data revealed that a notable portion of the cohort reported clinically relevant levels of comorbid somatic symptoms, insomnia and fatigue. The findings corroborate earlier studies such as (Zahid et al., 2024b); Shahzadi et al. (2023) and Hanif et al. (2024), all of which has shown a medium to high levels of reported somatic symptoms, insomnia, and fatigue.

The second objective of the present study, i.e., to identify the therapeutic impact of Progressive Muscle Relaxation (PMR) in alleviating somatic symptoms, insomnia, and fatigue has been proved as well. The findings of the present study indicate that PMR yielded statistically significant improvement in SSS, RIS, and FAS post intervention. The findings of the present study are consistent with prior studies like Schröder et al. (2012), suggesting that (PMR reduces the quantity and severity of somatic symptoms. These reductions were sustained throughout 6 months of follow-up period, demonstrating PMR's long-term advantages. Furthermore, it suggests that PMR helps to reduce comorbid symptoms, including anxiety and sadness, while also improving overall quality of life. These findings demonstrate the efficacy of PMR as a non-invasive method of addressing somatic distress.

Moreover, this study's findings confirm that Progressive Muscle Relaxation has shown significant effectiveness in reducing the number and severity of symptoms of insomnia. The results of this study corroborate with prior research showing the effectiveness of PMR in reducing sleep disruptions and enhancing sleep quality. According to Apriany and Aljaberi (2023), PMR improves relaxation by relieving muscle tension and lowering stress, which may lead to improved sleep. Furthermore, PMR is a low-cost and easily accessible intervention that consumers can use at any time and from any location. Similarly, Chegeni et al. (2018) presents in their study findings that PMR is able to positively impact a number of domains of sleep quality, including perceived quality of sleep, time taken to fall asleep, total sleep time, and overall sleep efficiency

simultaneously. The empirical evidence points to PMR as a simple, effective approach for managing sleep related problems and supporting general well-being.

In a similar manner, in line with the literature, the findings of the present study confirm that PMR is an effective way of treating fatigue. Although there is no direct research showing the effects of PMR in treating fatigue specifically among university students, it has been proven to treat fatigue successfully among other various populations. These studies may reinforce the outcomes of the current study, predicting a significant effect of PMR on university students similar to various other populations.

To illustrate, a research carried out by Siregar et al. (2024) concludes that PMR has significantly reduced the severity of fatigue complaints among truck drivers in Indonesia, hence demonstrating its ability to ease prolonged stress and exhaustion. Furthermore, a study on COPD patients conducted by Chegeni et al. (2018) showed that fatigue and related complaints have significantly reduced following the PMR intervention. The noticeable reduction between the scores obtained on pre and post testing exemplifies the efficacious nature of PMR in individuals experiencing psychosomatic complaints. Correspondingly, a research based on cancer patients by Jaya and Thakur (2020) identified PMR to be able to assuage the fatigue levels substantially, evidencing its role in increasing energy levels and overall well-being.

All these results in totality ascertain that PMR is an efficacious treatment method that can be employed to manage fatigue, although its direct effects on student populations are yet to be assessed. Keeping in mind such vastly corroborated efficacy of PMR, it is more than apt to infer that like all other previously studied populations, students, who most often report elevated levels of fatigue traceable back to educational obligations, will also be assisted from PMR as an effective, low-cost, and non-invasive treatment.

Lastly, the final objective of the present study, i.e., to determine the role of somatic symptoms in predicting insomnia and fatigue was supported. Findings demonstrate that somatic symptoms can predict, to a considerable extent, the variance in both insomnia and fatigue.

The findings underscore the utility of Progressive Muscle Relaxation in addressing somatic symptoms, indicating that PMR is an effective and easily implementable treatment option for individuals reporting somatic complaints, insomnia, and fatigue.

Limitations

Potential limitations of the study include:

1. A key limitation of the study was the small study sample (N=19). This small sample size, which can potentially interfere with the generalizability, should have been large to ensure external validity.
2. The screening procedure did not include clinical interviews, the implementation of which might have allowed for a more well-characterized sample.
3. The study was limited due to time constraints, which restricted the ability to perform long-term follow-up.
4. Another key limitation was that the conduction of study during the month of Ramzan may have impacted participants ‘schedules and overall functioning.

Conclusion

The main goal of the current study was to investigate the therapeutic impact of Progressive Muscle Relaxation (PMR) in alleviating somatic symptoms, insomnia, and fatigue among university students. In light of the elevated prevalence rates of these issues in university student cohorts, the study underscores the need for analyzing the effectiveness of psychological interventions for symptom reduction. The current research hypothesized that after the successful conduction of PMR intervention, the university student cohort would report a substantially lower level of symptoms across all variables included in the study. A government university, Islamia College University, Peshawar was selected for the study and a total of 21 participants were recruited from the institution. Since the sample size was smaller, a non-parametric test, the Wilcoxon signed-rank test, was utilised to measure and compare the differences among the scores collected prior to and after the conduction of intervention.

The current study provides robust evidence supporting the efficacy of progressive muscle relaxation in alleviating somatic symptoms, insomnia, and fatigue. The findings supported PMR as a viable and effective therapeutic technique for alleviating somatic symptoms, insomnia, and fatigue and proved that PMR can yield statistically significant symptom reduction in all study measures. The results highlight that targeting physical or somatic manifestations is a key approach in alleviating psychosomatic symptomatology.

PMR significantly reduced muscle tension, physiological distress, and overall symptom intensity, demonstrating its efficacy as a non-invasive and widely available intervention for stress management and sleep improvement. The study also found that PMR is beneficial in relieving fatigue, albeit its benefits were more focused on physical relaxation.

Conflict of Interest

The authors showed no conflict of interest.

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