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Original Article

Effects of Stretching Exercise and Tens Therapy on Severity of Restless Legs Syndrome in Obese Population

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ABSTRACT

Restless Legs Syndrome (RLS) is a disorder in which you have an uncontrolled need to move your legs, generally in response to an unpleasant feeling. It usually happens in the evening or at night, while you're seated or lying down. Moving briefly alleviates the uncomfortable sensation **Objective:** To determine the effects of stretching exercises and TENS therapy on severity of restless leg syndrome in obese population. **Methods:** In this single-blinded, randomized, controlled study, 30 subjects with RLS aged above 20 years were randomly assigned into two groups, intervention group (TENS +stretching) and control group (stretching). It was conducted at multiple hospitals in Multan. Both groups received these interventions for 8 weeks (5 times a week for 8 weeks). Outcome measures included severity of pain in accordance with IRLSSG-score **Results:** Independent t test was applied on baseline group 1(interventional group) is compare with group 2 (control group). The results showed that there was statistically significant difference between two groups with $p < 0.05$. IRLSSG-score mean in interventional group15.94 ±6.27 was more than control group 7.42±2.78. The mean difference in interventional group 15.94 ±6.27 is more than control group 15.94 ±6.27, which shows greater effectiveness of TENS as compared to stretching in treating restless leg syndrome**. Conclusions:** TENS and stretching is a suitable and durable approach for RLS treatment and improve pain. TENS and stretching demonstrated more clinical benefits than stretching alone with regard to IRLSSG score parameters Hence, Alternate Hypothesis was accepted.

INTRODUCTION

Restless legs syndrome (RLS) is a disorder in which you have an uncontrolled need to move your legs, generally in response to an unpleasant feeling. It usually happens in the evening or at night when you're seated or lying down, which aids in the creation of a questionnaire. Moving briefly alleviates the uncomfortable sensation [1]. Cramps are excruciating sensations brought about by extraordinary compulsory compressions of skeletal muscles, mainly inside the calf, once in a while enduring from various seconds to numerous minutes [1]. A leg cramps might be an agony that comes from a leg muscle. Leg cramps (regularly alluded to as night cramps) in some cases happen most normally in the evening. Night leg cramps are compulsory excruciating constrictions of skeletal muscles stir inside the calf and bottoms of the feet [2]. They will occur with no acknowledgeable cause, and are then said as common calf cramps [3]. However, squeezes are primarily problem, they will beat indication of elective sorts of harming, Ekbom condition or jerkiness. It's an indication that occasionally occurs in an extremely lower leg muscle, underneath and

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behind a knee. Albeit by and large they don't appear to be destructive and resolve just in certain occurrences they need an all-inclusive period and may end in serious agony, upset rest and fabricate somebody feel restless [4]. Especially nighttime cramps will cause trouble for patients requiring fast agony decrease and compelling avoidance. Extending the lower leg muscles helps forestalling nighttime cramps. Medication treatment of leg cramps incorporates metallic component and anti-malarial drugs [5]. According to several research, obese adults have reduced dopamine receptor levels in the brain. Because reduced dopamine function is thought to play a significant role in RLS, this might be the connection between the two. Dopamine is a naturally occurring substance in the body that transfers impulses between nerve cells [6]. Leg cramps happens ordinarily on disadvantage, especially inside the matured [7]. RLS jumble portrayed by horrendous sensations inside the legs and an upsetting, overwhelming desire to move them RLS might be a condition portrayed by the inconvenience or desire to move the lower leg that occurs at day or inside the evening/night [8]. Patients influenced by RLS experience awkward nighttime sensations inside the legs with the inclination to move [9]. RLS should be separated from akathisia that is an inclination to move the total body inside the shortfall of awkward sensations [10]. Fretful legs condition (RLS) is a persistent problem, happening at least doubly consistently and exacting at least moderate misery in 1.5% to 2.7% of the population [11]. A tendency to fidget predominance is high among the patients going through dialysis [12]. With RLS mastery occasional leg developments. RLS should seriously mull over as an essential problem, or optional to various conditions like iron insufficiency pallor, end-stage excretory organ infection, and customary incubation, obese and patient with MS [13]. Devices are fostered that work with the recognizable proof and treatment of RLS, particularly the fundamental symptomatic rules for RLS are refined, and seriousness scales (IRLS, RLS- 6, and JHSS) are developed [14-16]. The ID of RLS is totally upheld emotional information. Patients should report an inclination to move the legs (and arms) with or while not horrendous impressions that is caused by rest, alleviated by development, and more awful inside the evening or in the night than for the duration of the day (fundamental measures). Target information like inordinate occasional leg developments, positive reaction to dopaminergic medicine, and case history of RLS or discoveries of a neurologic assessment can't substitute any of the fundamental rules. ID of RLS is totally upheld emotional information. Patients should report an inclination to move the legs (and arms) with or while not horrendous impressions that is caused by rest, alleviated by development, and more awful inside the evening or in the night than for the duration of the day (fundamental measures). Target information like inordinate occasional leg developments, positive reaction to dopaminergic medicine, and case history of RLS or discoveries of a neurologic assessment can't substitute any of the fundamental rules. Symptomatic standards embrace case history, the presence of occasional leg developments (PLM) once conscious or snoozing, and a positive reaction to dopaminergic treatment [17].

METHODS

It was a randomized controlled trial, conducted in physiotherapy department of Ashraf Naseer Medical Center and Zeenat Javed Medical Complex, Multan. The study was completed in a period of six months. Sample size was 30, calculated by Epitool, by addition of 20% attrition rate total sample size was 34. Convenient sampling was done. Obese patients having age above 20 yrs, both genders, have severity of RLS 3 nights a week or more, patients with moderate to severe severity according to the scores of IRLSSG scale and Score above 11 and BMI above 25 were included. Signs of serious pathology (e.g., malignancy, inflammatory disorder, Infection) or another sleep disorders other than RLS were excluded.

Data Collection Tool:

Body mass index (BMI)

BMI indicated obese and obesity with relatively low sensitivity (66–82%), but high specificity (90–92%) [16]

Exercise recording form Personal characteristics of adolescents were connected with validity: sex (SED: P = 0.007; LPA: P = 0.001; VPA: P = 0.009) and setting (LPA: P = 0.000; MPA: P = 0.047). For LPA, reliability was related to the ease of completing the physical activity report (low convenience: P = 0.014; high convenience: P = 0.045) [17]. The concept validity and internal consistency reliability of the IRLS total score, severity, and severity effect subscales were satisfactory (alpha=0.81, 0.80, and 0.76, respectively), and concurrent validity (r=-0.68, -0.52, -0.70, respectively [18].

Data Collection Procedure:

Screening: Participants who fulfilled the above-mentioned criteria were enrolled for this particular study. Informed written consent were taken by the participants and were assigned to one of two groups very randomly. The treatment protocol applied to a single participant was for 8 weeks with 5 sessions per week. According to mentioned inclusion and exclusion criteria, participants were recruited and requested to take part in the study. Participants filled written informed consent which was in both English and Urdu. Treatment group was assigned to

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each participant using chit pick box method. 15 chits were marked as Group A and 15 chits were marked as Group B. Each patient was requested to draw a chit from box. Patient was allocated to respective group whenever a chit was drawn, the study was single blinded in which patients were managed to be masked of treatment options available for other groups. Clinicians and assessors could not be blinded due to apparently very different procedures of two groups. Baseline data was collected before assigning the participants in two groups and follow up was done after 12 days. Data was collected with the help of International restless legs syndrome study group scale(IRLSSG).

Intervention:

Group A: Prior to the treatment, baseline treatment was given to the patients, followed by TENS therapy. Afterwards, the patients performed stretching exercises in each plane for 5 times. Patients were in seated position with their feet flat on the floor and shoulder relaxed. Then, isometric stretching was performed. Muscles were stretched for 7-15 seconds for 3-5 repetitions and then relaxed for at least 20 seconds.

Group B: Prior to the treatment, baseline treatment was given to the patients. Patients were in seated position with their feet flat on the floor and shoulders relaxed. Then, static stretching was performed. Therapist asked the patient to move cervical muscles until they could go, within pain free range, then retained that position for 20 to 45 seconds. Patient repeated static stretches twice to thrice times each.

RESULTS

Participants were evaluated using inclusion and exclusion criteria. Participants who satisfied the inclusion criteria numbered 30. 30 individuals were randomly assigned to either the interventional (TENS + stretching) or control groups (stretching). There were no subjects dropped from either Group (Table 1,2). On the basis of mean standard deviation, baseline values of socio-demographic data from both groups were comparable. The table detailed the comparison of socio-demographic variables such as participants' age, weight, and height, as well as their BMI across both groups. The average age of participants in both groups was 40.097.74 years. In both groups, the average height was 62.7 2.54 m2 and the average weight was 86.13 ±3.38kg. Body Mass Index(BMI) was 36.973.98 kg/m2 in both groups. The Shapiro-Wilk test was used to determine the normality of the data, which revealed that the data was normally distributed (p> 0.05)(Table 2). To compare the two populations at the pre-treatment and post-treatment levels, parametric tests were used. Both groups were similar in(IRLSSG) at baseline treatment values with p>0.05 (Table 3). Test applied for between group and within group comparison. Paired t-test was applied on baseline is compare with end value in both groups. The results showed that IRLSSG-score decreased to greater extent in interventional group with means difference 15.94±6.27 as compared to control group with mean difference of 7.4±2.78 Independent t test was applied on baseline group 1(interventional group) is compare with group 2 (control group). The results showed that there was statistically significant difference between two groups with $p < 0.05$. IRLSSG-score mean in interventional group 15.94 ±6.27 was more than controlgroup7.4±2.78 (Table 4). The mean difference in interventional group 15.94 ±6.27 is more than control group 15.94 ±6.27, which shows greater effectiveness of TENS as compared to stretching in treating crestless leg syndrome(Table 4).

Comparison of Socio-Demographic Variables of Groups

On the basis of mean standard deviation, baseline values of socio-demographic data from both groups were comparable. The table detailed the comparison of socio-demographic variables such as participants' age, weight, and height, as well as their Body Mass Index (BMI) across both groups. The average age of participants in both groups was 40.097.74 years. In both groups, the average height was 62.72.54m2 and the average weight was 86.133.38kg. Body Mass Index(BMI) was 36.973.98 kg/m2 in both groups(Table 1).

Between groups(Parametric test)

Independent t- test Comparison on Baseline value

Independent t test was applied on baseline group 1(interventional group) is compared with group 2 (control group) to compare Pre-treatment values. IRLSSG score mean in group 1 was 24.47±6.79 and in group 2 was 24.27±5.18 and p value was 0.07(Table 3). Independent t test was applied on baseline group 1(interventional group) is compared with group 2 (control group) to compare Post-treatment values. Post- IRLSSG mean in group 1 was 8.60±0.51 and in group 2 was 21.50±2.12 and p value was < 0.001(Table 3). Paired t-test was applied on baseline group 1(interventional group) is compared with end value (interventional group) pre-IRLSSG score mean in group 1 was 24.47±6.79and post-IRLSSG score mean was 8.60±0.51, mean difference was 15.94 ±6.27, p-value was <.001. Paired t-test was applied on baseline group 2(control group) is compare with end value (control group).IRLSSG score mean in group 1 was 35.30±1.56 and post- IRLSSG score mean was 21.50±2.12. mean difference was 15.94 ±6.27, p-value was <.001. IRLSSG score decrease more in interventional group than control group that shows the effectiveness of interventional group over control group Interventional group=group 1 Control group =group 2 The results showed that there was statistically significant

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difference between two groups with p <IRLSSG score mean decreased to greater extent in interventional group with means difference 28.1±1.25 as compared to control group with mean difference of 7.4±2.78.this result show the effectiveness of TENS + stretching in treating RLS as compared to RLS alone(Table 4).

Study Groups		N	Mean ± SD
Group A TENS	Age of Participants	30	40.09±7.74 years
+ stretching	Height in inch	30	62.7±2.54 inch
Group B	Weight in kg	30	86.13±3.38kg
Stretching	Body Mass Index of Participants	30	36.97±3.98 kg/m2

Table 1: Demographics of participants

Mean 1	18.43
Mean 2	15.06
Variance	5
Confidence	0.95
Power	0.8
Tail	2
Sample size	
Sample size per group	17
Total sample size	30

Table 2: Mean and variance of sample size

Variables	Groups	No	Mean & SD	P value
IRLSSG score	Group 1	15	24.47±6.79	0.07
	Group 2	15	24.27±5.18	
Comparison on end value				
Variables	**Groups**	**No**	**Mean & SD**	**P value**
IRLSSG score	Group 1	15	24.47±6.79	0.07
	Group 2	15	24.27±5.18	

Table 3: IRLSSG score in both groups in pre and post test

Within group (parametric) Paired t-test Group 1 (interventional group)

Variables	No	Pre Mean±SD	Post Mean ±SD	Mean difference	P value
Group 1					
IRLSSG score	15		24.47±6.79		0.07
	15		24.27±5.18		
Group 2					
IRLSSG score	15		24.47±6.79		0.07
	15		24.27±5.18		

Table 4: Comparison of 2 groups pre and post test

DISCUSSION

Restless legs syndrome (RLS) is a disorder that causes an uncontrolled need to move your legs, typically in response to an unpleasant sensation. It usually happens in the evening or at night, while you're seated or lying down. Moving briefly alleviates the uncomfortable sensation [1]. Eloise G Harrison et all studied in 2019. That some non-pharmacological mediation might be valuable for decreasing RLS seriousness and improving rest. Current study concluded the same result that TENS are suitable and durable approach for RLS treatment and improve pain [19]. In another systematic review and meta-analysis to investigate the association between obesity and RLS, analyzing studies that reported relative risks, odds ratios, or hazard ratios comparing the risk of RLS among those with obesity vs people with normal weight. Adults who are obese are more prone to suffer from RLS, with women being at a greater risk [20,21]. Mansooreh Ali asghar pour et al. led an inquiry in public cash-flow to test the practicality of extending exercise on the seriousness of RLS in hemodialysis patients. The findings showed the need of training and conducting stretching exercises during dialysis for the goal of alleviating restless legs syndrome symptoms and hemodialysis patient quality of care [12]. Transcutaneous Electrical Nerve Stimulation (TENS) combined with stretching is more effective than stretching alone in reducing the severity of restless limb syndrome symptoms in an obese population, according to a current study. The findings emphasized the need of stretching and stretching exercises.

CONCLUSION

It is concluded that both techniques TENS plus stretching and stretching alone are suitable and durable approach for RLS treatment and improve pain. But TENS therapy with stretching was more effective as compared to stretching alone to reduce symptoms severity of restless leg syndrome in obese population.

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