

Research Article

Restless Leg Syndrome and its Association with Physical Activity During Pregnancy

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Abstract

Background: Restless Leg Syndrome (RLS) is a neurological disorder that is sensory motor in nature. It occurs at rest and is reduced with movement. Lack of exercise is considered a risk factor for RLS. The risk of developing RLS in pregnant females is 2 to 3 times higher than the general population. Pregnant females tend to have a lower level of physical activity.

Objective: The present study was designed to find frequency of Restless Leg Syndrome and its association with Physical Activity during pregnancy.

Methodology: This analytical cross-sectional study was conducted in three hospitals of Lahore. Sample size was consisted of 137 pregnant women. Participants were recruited from the outpatient department of gynecology from the hospitals. International Restless Leg Syndrome (IRLS) criteria were used for the diagnosis of restless leg syndrome. The International Physical Activity Questionnaire (IPAQ) was used to determine the level of physical activity.

Results: Mean age of the participants was 27.3 ± 4.17 years. Half 74(54.0%) of the study participants reported symptoms of RLS. Chi-Square analysis of the data showed a significant association between RLS and physical activity ($p < 0.05$).

Conclusion: Frequency of RLS in pregnant females is 54%. There was significant association between level of physical activity and RLS which means women who are physically more active has less chance of developing condition like RLS in pregnancy.

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Introduction

Restless Leg Syndrome (RLS) is a neurological disorder which is sensory motor in nature¹ and is characterized by the urge to move legs which is worse at night and at rest and is relieved by movement.² Restless leg syndrome is classified as primary or secondary. Secondary RLS occurs with underlying medical conditions such as, cardiovascular problems, diabetes, iron deficiency, kidney fail-

ure, Parkinson's disease³ and pregnancy.⁴ The classic feature of RLS is unpleasant sensation or discomfort in the legs. This usually occurs at rest and these symptoms subsides by movement. International Restless Leg Syndrome criteria is used to diagnose RLS.⁵ The risk of developing RLS in pregnant females is two to three times higher compared with the general population.⁶ Anemia is also considered a risk factor for RLS. Since, condition of anemia is common in pregnancy, it could be

responsible for the high prevalence (22.5%) of RLS in pregnant females in Pakistan.⁷ The prevalence of RLS in the first trimester is 8%, second trimester is 16% and third trimester is 22%, with prevalence rate highest in third trimester.⁸⁻¹⁰ The diagnosing criteria of RLS is same in pregnancy as it is for the non-pregnancy related RLS. No studies have shown that RLS should be diagnosed differently in pregnancy.¹¹

Nonpharmacological interventions of RLS include exercise (moderate intensity), massage, yoga and pneumatic compression devices. According to several studies lack of exercise is considered a risk factor for RLS. Moderate intensity exercise is considered beneficial in RLS.¹²

World Health Organization (WHO) defines Physical Activity as any movement of body which is produced when skeletal muscles contract and causes energy expenditure.¹³ According to several studies physical activity has a direct link with restless leg syndrome and it might play a significant role in decreasing RLS symptoms. Exercise and physical activity are used as non-pharmacological treatments for RLS and are effective in reducing the symptoms of RLS.¹⁴

Furthermore, Restless leg syndrome is a prevalent condition in other Asian countries as well.⁴ The point prevalence of this condition in Pakistan is 23.6% according to a study conducted in 2015⁽¹⁵⁾. Due to limited knowledge of etiology, RLS is underdiagnosed and poorly treated.¹⁶ Many options are available to treat RLS like dopamine agonist, anticonvulsants, opiates, hypnotics, benzodiazepine, and iron supplements. But these therapies are expensive and can lead towards complications after long term use. Complementary therapies like yoga, aerobic exercises, stretching, and massage therapy are the types of Physical activity which are more affordable and maintain patient's autonomy as well.¹⁷⁻¹⁹ According to the researcher's knowledge, there is no study conducted to date in Pakistan which focuses on the role which physical activity plays in treating RLS. This study determined the frequency of RLS and investigates the association between restless leg syndrome and level of physical

activity. This study will contribute to the awareness of physical activity in pregnant females which will increase their fitness level, decrease the complications during pregnancy and will be healthy for the baby. According to researcher's knowledge limited number of studies have been conducted in this area in Pakistan. Thus, this field of research needs to be further explored.

Methods

This is an analytical study which was conducted in three hospitals (Jinnah Hospital, Sheikh Zaid Hospital and Mansoorah Hospital) of Lahore. Approval was taken from the Ethics Committee of University of Lahore before collecting the data. Sample size consisted of 137 subjects. It was calculated through 22.5%⁷ prevalence of RLS by keeping the margin of error at 5% and 95% CI. Inclusion Criteria of the study subjects were second and third trimesters of the first pregnancies of the participants and age between 20 and 40 years. Exclusion criteria were history of stroke, diabetes, cardiovascular problems, and renal disease. The purpose of the study was explained and informed consent was taken from females before collecting data. Pregnant females were recruited from gynecology OPD's of hospitals. The first part of the questionnaire gathered demographic information. IRLS criteria were used for the diagnosis of restless leg syndrome. The International Physical Activity Questionnaire (IPAQ) was used to determine the level of physical activity. In IPAQ questionnaire the condition required to be classified as moderately physical active is playing double tennis or bicycling for 30 minutes which is culturally unacceptable in Pakistan for pregnant females. In order to equalize the condition of playing double tennis or bicycling of the questionnaire with household activities of pregnant females, benchmark used was calories consumed during the two activities 30 minutes in a day. The calories consumed during playing double tennis were calculated. Females were asking about their household activities and calories consumed during these activities were calculated from Compendium of Physical Activity.²⁰ Calories consumed during household activities and playing double tennis or

bicycling were compared and a conversion factor was calculated.

The obtained data was analyzed in Statistical Package for Social Sciences Version 25 (SPSS, Inc). Descriptive statistics, correlation and chi-square and Fisher exact tests were applied.

The Calories Consumed during 30 minutes of playing double tennis are 268 according to Compendium of Physical Activity.²⁰ Conversion factor is calculated in the following way:

30 Minutes of moderate activity = $30 \times \text{Calorie consumed per day} / 268 = 16.23$

Conversion factor = $16.23 / 30 = 0.54$

In order to classify the participants into low, moderate and high physical activity class, the conversion factor was applied for moderate physical activity and data were analyzed according to guidelines for Data Processing and Analysis of the International Physical Activity Questionnaire (IPAQ)-Short and Long Forms. IPAQ Group, 2005.²¹

The final data was then entered in SPSS and association was then calculated.

Results

Mean age of the participants was 27.3 ± 4.17 years (Min: 20, Max: 40). Out of 137 participants, 74 (54.0%) pregnant females were RLS positive while 63 (46.0%) pregnant females did not have any symptoms of Restless leg syndrome. (Figure 1)

Out of 63 pregnant females who were RLS negative, only 3 females belonged to high physical activity (PA) class, 38 belonged to moderate PA class and 22 belonged to low PA class. of 74 females who were RLS positive, 9 females belonged to high PA class 26 belonged to moderate PA class and 39 belonged to low PA class. Chi-square test was used to find out the association between the level of physical activity and restless leg syndrome. P value was equal to 0.009 which suggests there is an association between the level of physical activity and restless leg syndrome

The values are given in Table II.

The cut off values were determined on the basis of quartiles. The values below 25% (>4200) were considered low physical activity. Values between 25% and 50% ($4200-47600$) were considered moderate physical activity while values above 50% (<75600) were considered high physical activity.

The mean of the converted data was 3965.25 (± 2289) while the mean of non-converted data was 7343.07 (± 4239). And strong linear correlation was found between converted and non-converted data of moderate physical activity. (Figure II)

Table I: Conversion Factor

Activity	30 Minutes (Calorie Consumption)	Frequency/week	Weekly calorie consumption
Cooking	115.5	3	346.5 calories
Washing	122.5	2	245 calories
Cleaning	1	3	420 calories
Total	378	8	1011.5 calories
		Per Day	145 calories

Table II: Comparison of Level of Physical Activity in Females with and Without RLS

Variables	RLS - (n=63)	RLS + (n=74)	Total (n=137)	P Value
Level of Physical Activity				0.009
High (<75%)	3	9	12	
Moderate (25%-50%)	38	26	64	
Low (>25%)	22	39	61	

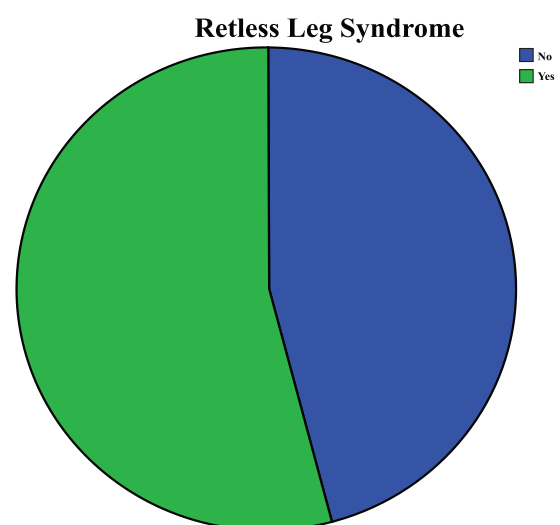


Figure 1: Percentage of Restless Leg Syndrome

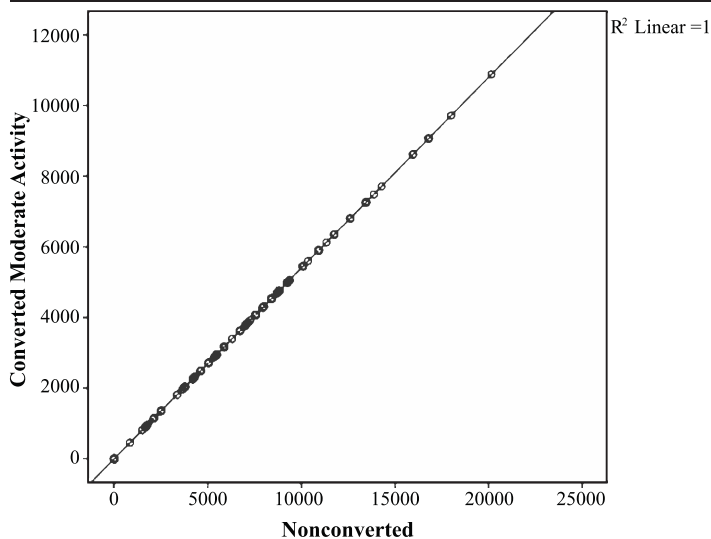


Figure 2: Scatter Plot for Converted Moderate Activity Data and Non-converted Moderate Activity Data

Discussion:

Relationship between pregnancy and restless leg syndrome was first described in 1945 by Ekbohm. Many researches have followed after that.¹⁶ Several studies have been conducted in Pakistan as well, but to the best of researcher's knowledge, none of have them studied the relationship of physical activity with RLS in pregnancy.¹⁶⁻²² This was the first study which focused on the association between RLS and Physical activity in pregnancy. According to the results of this study, women who are physically more active have less chance of developing condition like RLS in pregnancy. Physical activity provides a healthy lifestyle.

Physical activity reduces symptoms of restless leg syndrome. In the past research few authors²³ studied different non-pharmacological interventions for RLS in the systematic review of RCT's. They found a remarkable reduction in the severity of RLS symptoms by different non-pharmacological interventions including exercise therapy and physical activity. This study supports the current study, which states that physical activity reduces the risk of developing RLS.

Different studies were reviewed by some authors¹¹ who found that lack of exercise is a risk factor for RLS in pregnancy. A moderate physical activity improves the symptoms of RLS. His review supports the current study because this study also

emphasizes on the fact that active pregnant females has a less chance of developing RLS.

There are many benefits of physical activity in reducing the symptoms of RLS as stated in a study. The exact mechanism behind the improvement of RLS due to activity is still unclear. However this improvement maybe due to release of endorphins, dopamine, increased flow of blood in legs caused by exercise.²⁴ According to the results of this study inverse relation exists between RLS and physical activity. It supports the current study, which also claims that physical activity plays a significant role in improving RLS.

Effectiveness of low dose dopamine agonist and aerobic exercise program in reducing RLS symptoms was compared in a study.²⁵ The results of this study showed that exercise was as effective in reducing the severity of RLS as low dose dopamine agonist. This study is in accordant with the findings of the current study that shows a significant reduction in RLS severity with activity.

A systematic review was conducted¹² which states that severity of RLS can significantly be reduced physical activity, light therapy etc. further supporting the findings of the current study.

This study has certain limitations. Since this was the first study to study the factor of physical activity in Pakistan, a more appropriate questionnaire is needed which suits the cultural needs of Pakistan. The converted scale used in this study can be used for the future references after validation. Secondly, subjective method was used to screen the patients for exclusion criteria. Findings were not confirmed by objective tests. Thirdly, different ethnic backgrounds and cultural disparities were not considered due to their diversity, cross ethnic marriages and challenge to identify various ethnic subtypes. Further research is needed to overcome these challenges and determine the role of physical activity in depth. There is a need for increased awareness among the physicians and general population regarding physical activity to promote a healthy lifestyle.

Ethical Approval: Given

Conflict of Interest: The authors declare no conflict of interest

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