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To Study The Prevalence Of Greater Trochanteric Pain Syndrome In Gym Going Obese Women

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ABSTRACT

background: greater trochanteric pain syndrome (gtps) is a common cause of hip pain characterized by discomfort around greater trochanter. obesity is a risk factor for musculoskeletal disorder, and the combination of excess body weight and physical activity may exacerbate the likelihood of developing greater trochanteric pain syndrome.

methods: a total of 102 obese women who regularly attended gyms participated in this cross-sectional study. gtps was diagnosed based on clinical tests, including the resisted hip abduction test, jump sign, and single leg stance test.

results: the prevalence of gtps among the participants was found to be 22.55%. a significant number of individuals presented with positive clinical signs, indicating a notable association between obesity and gtps in gym-going women.

conclusion: greater trochanteric pain syndrome is prevalent in obese women engaged in gym activities, highlighting the need for targeted interventions to prevent and manage hip pain in this population. strength training, weight management, and rehabilitation strategies should be incorporated to reduce the risk and impact of gtps.

Keywords: *greater trochanteric pain syndrome, body mass index, obesity, prevalence.*

1. INTRODUCTION

Greater Trochanter: It is a large bony prominence located at superolateral of proximal end of femur where the neck of femur connects with the shaft. It is quadrangular in shape. Greater trochanter consist of an apex, medial surface, anterior surface and lateral surface. [1]

Greater Trochanteric Pain Syndrome (GTPS)

Greater Trochanteric Pain Syndrome (GTPS) refers to a common musculoskeletal condition characterized by lateral hip pain associated with the greater trochanter—the bony prominence on the outer side of the femur (thigh bone). This condition can lead to significant discomfort and tenderness over the lateral hip and can limit an individual's ability to engage in everyday activities, such as walking, climbing stairs, or sitting for long periods. [4] GTPS is often underdiagnosed because its symptoms can overlap with other conditions that cause hip or lower back pain. It primarily involves inflammation or irritation of structures around the greater trochanter, such as the tendons, bursa, and muscles attached to this region.[3][6]

Symptoms and Presentation: Pain Location: The pain in GTPS is typically localized around the greater trochanter, the bony prominence on the outer aspect of the hip. This pain is often described as aching, sharp, or throbbing and may intensify with movement or prolonged pressure on the hip. In many cases, the pain can radiate along the lateral aspect of the thigh, sometimes extending to the knee. [4] This is often called lateral hip pain or lateral thigh pain. Pain Aggravation: The pain associated with GTPS is often worsened by activities that involve prolonged standing, walking, or climbing stairs. Certain positions, such as lying on the affected side during sleep or sitting for long periods, can aggravate the pain.[6] Additionally, resisted hip abduction (moving the leg away from the body) may elicit or increase the pain during physical examination. Tenderness: A hallmark of GTPS is localized tenderness over the greater trochanter, particularly when pressure is applied to the region. Patients often report an inability to touch or rest on the affected side without experiencing significant discomfort.

Loss of Function: The pain and discomfort may significantly affect mobility, leading to reduced range of motion and functional limitations in daily activities. In severe cases, patients may experience difficulty walking or standing for prolonged periods.

Greater Trochanteric Pain Syndrome (GTPS) is more common in females between the ages of 40 and 60[4], though it can affect individuals outside this age range as well. The higher prevalence in females is likely due to anatomical differences, such as a broader pelvis, and hormonal factors that can influence tendon and ligament elasticity. Studies show that GTPS is a significant contributor to hip pain, with 10% to 20% of patients presenting with hip pain in primary care being diagnosed with it. [4] The estimated incidence rate is around 1.8 cases per 1000 individuals per year. [4] While not as widely recognized as other hip pathologies like osteoarthritis, GTPS remains a frequent cause of lateral hip pain. Additionally, certain occupations or physical activities involving repetitive motions or prolonged standing may increase the risk of developing GTPS.

Early recognition and appropriate conservative management such as physical therapy, load modification, and shockwave therapy have shown to be effective in most GTPS cases, while surgical intervention is typically reserved for those with refractory symptoms [10]

Greater Trochanteric Pain Syndrome in Gym-Going Obese Women

Greater Trochanteric Pain Syndrome (GTPS) is a common musculoskeletal condition characterized by lateral hip pain, often resulting from gluteal tendinopathy, iliotibial band friction, or trochanteric bursitis.[3] It predominantly affects middle-aged and older adults, particularly women, due to hormonal and anatomical differences that contribute to increased mechanical stress on the hip region. While GTPS is widely studied in the general population, its prevalence among obese women engaging in gym-based exercise remains relatively underexplored. Given the increasing participation of overweight individuals in structured fitness programs, understanding the impact of obesity on GTPS in this specific group is crucial.

Obesity is a well-established risk factor for various musculoskeletal disorders, including GTPS. Excess body weight places additional stress on the hip abductors and surrounding soft tissues, leading to biomechanical imbalances and increased load on the greater trochanter. In gym-going obese women, the repetitive nature of certain exercises, such as squats, lunges, and treadmill walking, may exacerbate these stresses, increasing the likelihood of developing GTPS. Furthermore, fat accumulation around the hip region may contribute to increased compression of the gluteal tendons, further aggravating the condition.

Despite the benefits of physical activity, gym-based exercise can sometimes be a double-edged sword for obese individuals predisposed to GTPS. The high-impact nature of some workouts, improper form, and inadequate warm-ups may lead to excessive strain on the lateral hip structures. Additionally, a lack of awareness regarding proper footwear, exercise modifications, and load management can further predispose this population to GTPS. Understanding the prevalence of GTPS in gym-going obese women can help in identifying preventive measures and modifying exercise regimens to reduce the risk of injury.

Early identification and management of GTPS in this population are essential to prevent chronic pain and disability. Many gym-going women may attribute their hip pain to general exercise fatigue, delaying diagnosis and appropriate treatment. Healthcare professionals, fitness trainers, and physical therapists must collaborate to create exercise routines that minimize excessive stress on the hip abductors while promoting weight loss and overall fitness. A multidisciplinary approach, including targeted strengthening exercises, weight management strategies, and lifestyle modifications, may help mitigate the prevalence and severity of GTPS.[5][6]

2. METHODOLOGY

Material: Mat/Plinth, Weighing machine and Height scale.

A Cross-sectional, observational study done from gyms in Kolhapur for duration of 1year using prevalence of Obesity in women 10.7% study subjects were selected according to inclusion and exclusion criteria. **Inclusion criteria:** Gym going women working out for less than 3 months, Above 40 years of age, BMI more than 25kg/m2 **Exclusion criteria:** Recent fractures., Hip Dislocation., Total hip arthroplasty, Neoplasm., Prolapsed Intervertebral Disc, Positive Straight leg raise Test.

3. PROCEDURE

The study protocol was presented for approval in front of institutional ethical committee and protocol committee of D. Y. Patil college of Physiotherapy, Kolhapur. After that concerning subject was approached and purpose of study explained. Written consent was taken from subjects willing to participate

Subjects with BMI more than 25kg/m^2 were selected. The procedure was explained to the subject. A written consent was taken from the subjects those willing to participate. The subject was assessed with help of following clinical test.

RESISTED ABDUCTION TEST: The affected limb was abducted to 45 degrees by the therapist with the subject in side

lying position. The subject was asked to maintain abduction against the examiner's resistance.

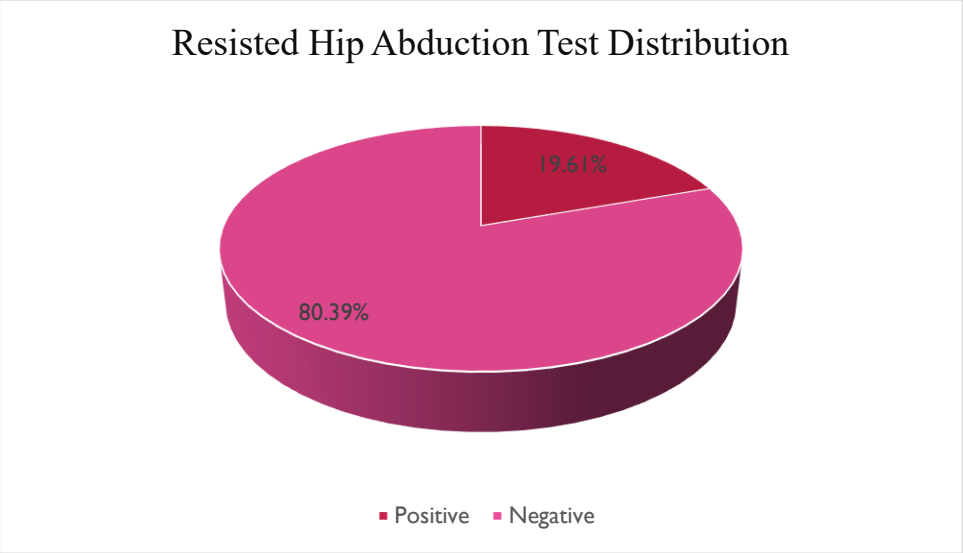
JUMP SIGN: The greater trochanter was directly palpated by the therapist to check for pain.

SINGLE LEG STANCE TEST: Subject was asked to stand on the affected leg with full weight bearing. Pain within 30 seconds has a very high sensitivity for positive MRI findings. (100%).

The interpretation of the study were done according to the test score recorded during the study.

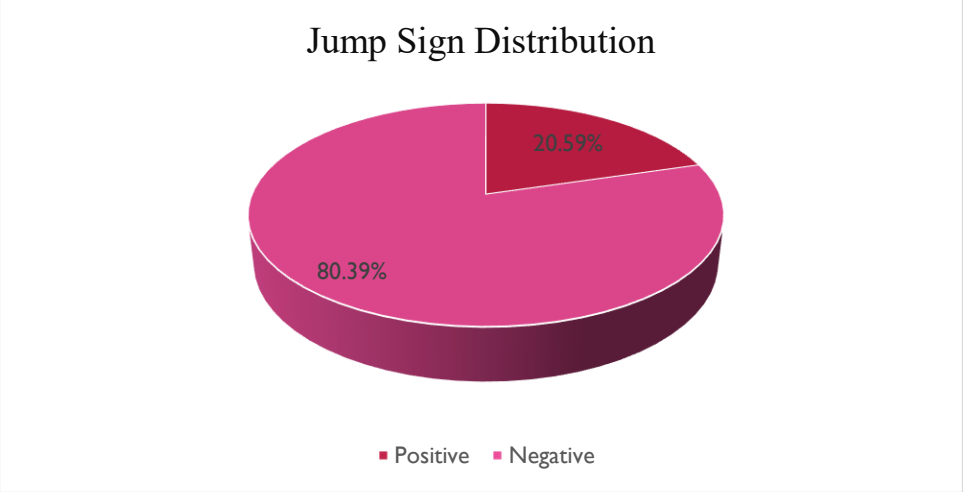
4. RESULT

A study on Greater Trochanteric Pain Syndrome among 102 gym going obese women revealed a prevalence rate 22.55%. Mean and standard deviation of Age, BMI and Months of training of participants with mean for age, BMI and Months of training being 47.44, 31.02 and 1.86 respectively and standard deviation being 4.08, 2.43 and 0.77 respectively.



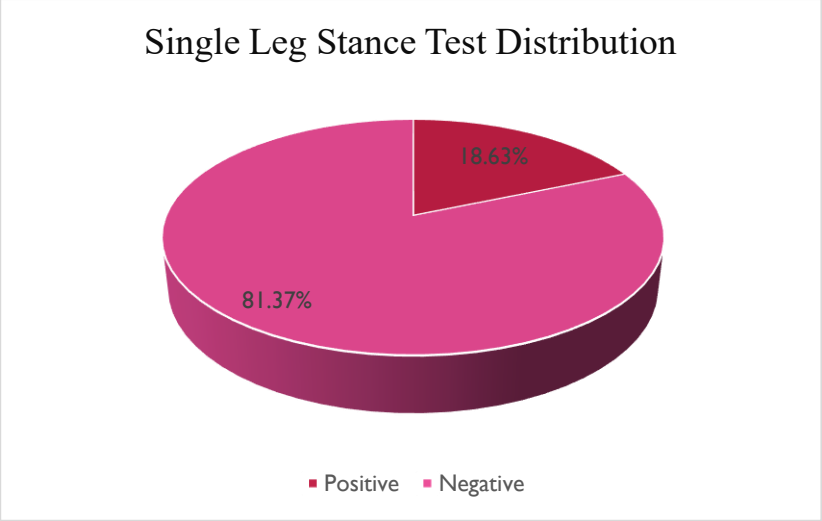
This shows the number of positive and negative results for the resisted hip abduction test.

Among 102 participants 20 were tested positive and 82 were tested negative with 19.61% and 80.39% respectively.



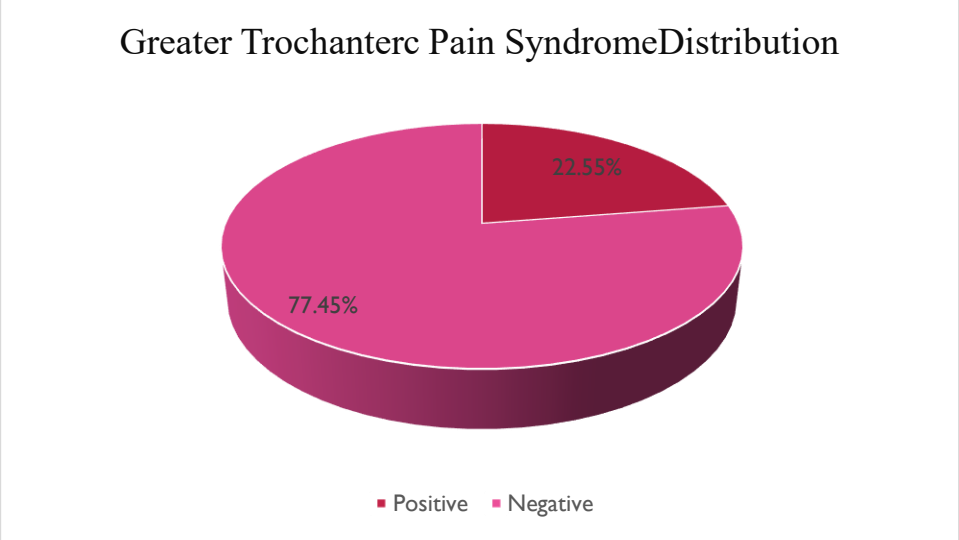
This shows the number of positive and negative results for the Jump Sign.

Among 102 participants 21 were tested positive and 82 were tested negative with 20.59% and 80.39% respectively.



This shows the number of positive and negative results for the Single Leg Stance test.

Among 102 participants 19 were tested positive and 83 were tested negative with 18.63% and 81.37% respectively.



The chart shows prevalence of greater trochanteric pain syndrome in gym going obese women being 22.55%.

	Mean	Standard deviation.
NPRS at rest	1.51	1.8
NPRS during movement	1.75	2.11

Table.No.6 Numerical Pain Rating Scale

5. DISCUSSION

The present study investigates the prevalence of Greater Trochanteric Pain Syndrome (GTPS) in gym-going obese women, analyzing factors such as BMI, duration of training, and common clinical tests associated with GTPS. The results provide insights into the relationship between obesity, physical activity, and the onset of lateral hip pain.

A total of 102 gym going obese women with less than 2 months of training period were screened during research period.

The findings indicate a notable prevalence of GTPS among participants, with positive results on diagnostic tests such as the Resisted Hip Abduction Test, Jump Sign, and Single Leg Stance Test. The findings indicate a notable prevalence of GTPS

among participants, with 22.55% testing positive for the condition. Positive results were identified using diagnostic tests such as the Resisted Hip Abduction Test (19.61%), Jump Sign (20.59%), and Single Leg Stance Test (18.63%)[7] These results align with previous research suggesting that excessive mechanical loading, altered biomechanics, and inflammatory processes contribute to GTPS in obese individuals.[5][8] A significant number of participants reported pain at rest and during movement, as measured by the NPRS scale. These results align with previous research suggesting that excessive mechanical loading, altered biomechanics, and inflammatory processes contribute to GTPS in obese individuals.

BMI appears to be a contributing factor to the development of GTPS [4], as higher BMI levels are associated with increased stress on the hip abductors and lateral hip structures. This added stress may predispose individuals to gluteal tendinopathy and bursitis [4][6][10], which are primary components of GTPS. Additionally, the study suggests that gym training does not necessarily mitigate the risk, possibly due to improper training techniques, insufficient warm-ups, or excessive strain on the hip abductors in individuals with obesity.[8]

Another key finding is the variation in pain intensity among participants. While some individuals reported minimal discomfort, others experienced significant pain, especially during movement. This variability may be influenced by individual fitness levels, pre-existing musculoskeletal conditions, or variations in exercise regimens.[3]

Clinically, the study reinforces the importance of early identification and intervention for GTPS in obese women who engage in gym activities. Strengthening programs targeting the gluteal muscles, proper warm-up routines, and modifications in exercise intensity may help reduce the incidence and severity of GTPS.[5][8] Additionally, weight management strategies could play a crucial role in minimizing excessive hip loading.[9]

The study also underscores the need for proper screening protocols for gym-going obese women to identify potential risk factors before engaging in high-intensity workouts. Routine assessments by physiotherapists or healthcare professionals could help detect early signs of GTPS, allowing for timely intervention. Awareness campaigns emphasizing correct exercise techniques and injury prevention measures may reduce the likelihood of GTPS occurrence.[6]

Future research should explore longitudinal data to assess whether specific exercise modifications or weight loss interventions can effectively reduce the prevalence of GTPS in this population. Moreover, a larger sample size with a control group would provide more robust evidence regarding the association between obesity, exercise, and GTPS.

One of the plausible reasons for the relatively low prevalence of GTPS in the present study may be the wide variation in exercise routines among participants. Gym-goers often engage in diverse workout regimens, including strength training, cardio, functional training, stretching, and low-impact exercises. This diversity in activity type may help distribute mechanical loads more evenly across different muscle groups and joints, reducing repetitive stress on the lateral hip structures associated with GTPS. Unlike individuals involved in repetitive or high-impact activities such as running or stair climbing, participants following varied routines may experience lower localized strain on the gluteal tendons and trochanteric bursa, thereby mitigating the development of GTPS.

Furthermore, personalized training plans and alternating exercise days may allow for adequate recovery of the hip musculature, further minimizing the risk of developing overuse injuries like GTPS. The inclusion of stretching and mobility-focused activities in some routines could also play a protective role in maintaining soft tissue flexibility and joint function.

In conclusion, the study highlight the complex interplay between obesity, physical activity, and musculoskeletal health, emphasizing the importance of individualized exercise programs and early screening to prevent conditions such as GTPS in at-risk populations.

6. CONCLUSION

This study highlights the prevalence of GTPS among gym-going obese women, underscoring the interplay between obesity, physical activity, and lateral hip pain. The findings suggest that while exercise is crucial for overall health, improper training or excessive mechanical loading may contribute to GTPS development. Addressing modifiable risk factors such as weight management, appropriate exercise regimens, and targeted strengthening programs can help mitigate the impact of GTPS. Future research should focus on preventive strategies and rehabilitation approaches to improve the musculoskeletal health of obese individuals engaged in physical activity.

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