International Journal of Science and Research (IJSR)
ISSN: 2319-7064
Impact Factor 2025: 7.089

Prevalence of Gluteal Amnesia among Sedentary Office Workers: A Cross-Sectional Study

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Abstract: ***Background**: These days sedentary occupational work is becoming common due to advancing technology, involve prolonged sitting which is strongly associated with musculoskeletal disorders, especially low back pain. Gluteal amnesia, which is characterized by reduced activation of the gluteal muscles, is emerging as a concern that may contribute to altered movement patterns and compensatory strain, but there is scarcity of evidence. **Objective**: To determine the prevalence of gluteal amnesia among sedentary office workers and to examine its association with sitting duration, physical activity level. **Methods**: A cross-sectional observational study was conducted among 200 sedentary office workers within the age group 25–50 years. Physical activity was assessed using the International Physical Activity Questionnaire (IPAQ). Gluteal muscle function was evaluated using the Prone Hip Extension Test (PHE) and the Single-Leg Bridge Test (SLBT). Descriptive and inferential statistical analyses were performed. **Results**: Out of 200 participants, gluteal amnesia was prevalent in 118 (59%) participants. A statistically significant association was observed between gluteal amnesia and prolonged sitting duration ($p < 0.05$) as well as low physical activity levels ($p < 0.01$). **Conclusion**: Gluteal amnesia is highly prevalent among sedentary office workers. Early screening and preventive exercise-based workplace interventions may reduce the risk of musculoskeletal dysfunction.*

Keywords: Gluteal amnesia, sedentary behavior, office workers, gluteus maximus, musculoskeletal disorders

1. Introduction

In contemporary workplaces, majority of employees, mainly those in office-based role, spend prolonged working hours in sitting position [1]. Prolonged sitting has been associated with numerous adverse health outcomes, which includes metabolic dysfunction, increased cardiovascular risk, postural impairments, and musculoskeletal disorders [2,3]. Previous literatures report a high prevalence of musculoskeletal discomfort among office workers, with the neck, shoulders, and lower back being the most commonly affected regions [4,5].

Among musculoskeletal concerns, gluteal amnesia is a major concerning issue, generally referred as “dead butt syndrome” [6,7]. It describes reduced or delayed activation of the gluteus maximus and gluteus medius during functional movements [6,8]. Although it is widely discussed in physiotherapy practice, there is very limited evidence on gluteal amnesia among sedentary office workers [8].

The gluteal muscles play a crucial role in hip extension, stabilization of pelvis, gait biomechanics, and also maintains upright posture [8,9]. Due to inadequate activation of these muscles, there is compensatory overactivity of the hamstrings and lumbar extensors, increasing mechanical load on the lumbar spine, hips, and knees [6,11]. Such compensatory patterns have been linked to low back pain, altered movement control, and increased injury risk [12,13].

Proposed mechanisms underlying gluteal amnesia include sustained hip flexion during prolonged sitting, reciprocal inhibition from tight hip flexors, and deficits in postural control [6,14]. While several studies have documented gluteal weakness, atrophy, or altered activation in individuals with chronic low back pain, there is limited data assessing the prevalence of gluteal activation among sedentary office workers.

Given the high prevalence of MSDs in sedentary populations [4,5], understanding the extent of gluteal amnesia is clinically and ergonomically important. Assessing prevalence of gluteal amnesia may help in early preventive strategies and workplace ergonomic interventions [15]. Therefore, this study aimed to estimate the prevalence of gluteal amnesia among sedentary office workers and to explore its associations with sitting duration and physical activity levels.

2. Methodology

Study Design

A cross-sectional observational study was conducted following approval from the Institutional Ethics Committee.

Participants

Sedentary office workers were recruited based on predefined inclusion and exclusion criteria.

Inclusion Criteria:

- Age 25–50 years
- Employed in a sedentary office role for ≥ 6 months
- Sitting ≥ 6 hours per day [1]
- BMI 18.5–29.9 kg/m²
- Low to moderate physical activity level (IPAQ categories 1 and 2) [16]

Exclusion Criteria:

- Recent lower-limb or spinal surgery (< 6 months)
- Current physiotherapy or rehabilitation
- Neurological or congenital conditions
- Existing hip, pelvis, or lumbar spine pathology
- Pregnancy or ≤ 6 months postpartum
- Regular participation in structured gluteal strengthening programs

3. Procedure

All participants fulfilling the inclusion and exclusion criteria were screened, and ethical approval was obtained from Institutional Ethics Committee. After explaining the purpose and procedure of the study, written informed consent was taken prior to participation. Demographic and occupational data were collected, including age, sex, duration of sedentary work, and BMI. Physical activity levels were assessed using the IPAQ [16]. Following this, the outcome measures were taken in standardized manner.

Outcome Measures

1) Prone Hip Extension Test (PHE Test)
The PHE Test was used to assess gluteus maximus activation patterns [8,17].

Procedure:
Participants lie prone on a plinth with arms relaxed. They were instructed to lift one leg straight off the table while keeping the knee extended. The examiner palpated the gluteus maximus, hamstrings, and lumbar erector spinae to observe muscle activation sequence.

Interpretation:
Gluteal amnesia was considered present if hamstrings or lumbar extensors activated prior to the gluteus maximus or if excessive pelvic or lumbar compensation was observed.

2) Single-Leg Bridge Test (SLBT)
The SLBT assessed gluteal endurance and pelvic control [18,19].

Procedure:
Participants performed a single-leg bridge while maintaining pelvic alignment. The duration (seconds) for which proper alignment was maintained was recorded.

Termination Criteria:
Loss of pelvic alignment (>10° drop), compensatory movements, pain, or fatigue [18,19].

Statistical Analysis
- Data were analyzed using **SPSS version 26.0**.
- Descriptive statistics (mean, standard deviation, frequency, percentage) were used for demographic and clinical variables.
  Prevalence of gluteal amnesia was calculated as a percentage.
- The **Chi-square test** was used to assess associations between gluteal amnesia and categorical variables (sitting duration, IPAQ category, gender).
- **Independent t-test** was used to compare SLBT duration between participants with and without gluteal amnesia.
- Statistical significance was set at $\mathbf{p < 0.05}$.

4. Results

Demographic Characteristics (n = 200)
- Mean age: 36.4 ± 6.8 years
- Gender: 112 males (56%), 88 females (44%)
- Mean sitting duration: 7.8 ± 1.2 hours/day

Prevalence of Gluteal Amnesia
Out of 200 participants, **118 (59%)** demonstrated signs of gluteal amnesia based on PHE and SLBT findings.

Association with Sitting Duration
Participants sitting ≥ 8 hours/day showed a significantly higher prevalence of gluteal amnesia compared to those sitting < 8 hours/day ($\chi^2 = 6.42$, $p = 0.011$).

Association with Physical Activity Level
A significant association was observed between low physical activity levels and gluteal amnesia ($\chi^2 = 9.18$, $p = 0.002$).

Single-Leg Bridge Test Performance
Participants with gluteal amnesia demonstrated significantly lower SLBT endurance times (mean: 22.6 ± 6.1 sec) compared to those without gluteal amnesia (mean: 34.8 ± 7.4 sec) ($p < 0.001$).

5. Discussion

The findings of our study suggests that gluteal amnesia is highly prevalent (59%) among sedentary office workers. Long hours of sitting and physical inactivity were significantly associated with reduced gluteal activation. These findings are similar with the biomechanical theories suggesting that sustained hip flexion and reduced neuromuscular demand contribute to gluteal inhibition.

The PHE Test and SLBT were used as practical screening tools for identifying gluteal activation deficits in sedentary office workers. Early detection may help in early corrective interventions and reduce the risk of compensatory musculoskeletal strain.

The current study fills an important gap in research by focusing specifically on gluteal amnesia in sedentary office workers. Although musculoskeletal disorders (MSDs) and low back pain are commonly reported in office workers [4,5], gluteal under-activation has mostly been discussed in clinical opinions rather than studied in large working populations [6,7].

Previous studies have shown that people with chronic low back pain often have gluteus maximus weakness, reduced muscle size, and altered activation patterns [20,23]. These findings support the importance of proper gluteal muscle function. The current study coincides with this evidence and suggests that prolonged sitting and low physical activity in office settings may lead to reduced neuromuscular activation of the gluteal muscles.

Overall, the PHE Test and SLBT proved to be simple, cost-effective, and clinically useful methods for detecting gluteal activation and endurance problems, making them suitable for screening in large groups of sedentary workers.

6. Conclusion

Gluteal amnesia appears to be a relevant and potentially prevalent condition among sedentary office workers. Identification of gluteal activation deficits using simple clinical tests may assist in early screening and prevention of

musculoskeletal dysfunction. Incorporating movement breaks, ergonomic modifications, and gluteal activation exercises into workplace health programs may reduce the risk of compensatory movement patterns and associated musculoskeletal complaints.

Tables

Table I: Demographic and Occupational Characteristics of Participants (n = 200)

Variable	Mean ± SD / n (%)
Age (years)	36.4 ± 6.8
Gender (Male/Female)	112 (56%) / 88 (44%)
Body Mass Index (kg/m²)	24.6 ± 3.1
Sitting duration (hours/day)	7.8 ± 1.2
Sedentary work experience (years)	9.3 ± 4.5
Physical activity level (IPAQ)	Low: 124 (62%) Moderate: 76 (38%)

Table II: Prevalence of Gluteal Amnesia Based on Clinical Tests (n = 200)

Assessment Outcome	Frequency (n)	Percentage (%)
Gluteal amnesia present	118	59
Gluteal amnesia absent	82	41

Table III: Association Between Sitting Duration and Gluteal Amnesia

Sitting Duration	Gluteal Amnesia Present n (%)	Gluteal Amnesia Absent n (%)	χ^2 value	p value
< 8 hours/day	38 (42.2%)	52 (57.8%)	6.42	0.011
≥ 8 hours/day	80 (72.7%)	30 (27.3%)		

Table IV: Comparison of Single-Leg Bridge Test Endurance

Group	SLBT Duration (seconds) Mean ± SD	t value	p value
With gluteal amnesia	22.6 ± 6.1	12.14	<0.001*
Without gluteal amnesia	34.8 ± 7.4		

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