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ORIGINAL ARTICLE

Prevalence of Upper Back Pain among The Sedentary Office Workers: A Prospective Cross-Sectional Study

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ABSTRACT

Background: Sedentary behavior and prolonged computer use are common among office workers and may contribute to upper back pain through prolonged sitting, poor posture, low physical activity, and inadequate ergonomics. However, evidence on upper back pain among sedentary office workers in Bangladesh remains limited. Therefore, this study aimed to determine its prevalence and assess associations with selected sociodemographic, occupational, and lifestyle factors.

Methods: A prospective cross-sectional study was conducted among 272 sedentary office workers at Bangladesh Medical University, Dhaka, from July 2025 to June 2026. Sociodemographic and occupational data were collected through interviews and clinical assessment. Upper back pain was assessed using a 10-point Numerical Rating Scale. Associations were analyzed using the chi-square test and odds ratios with 95% confidence intervals; $p<0.05$ was considered significant.

Results: Among 272 sedentary office workers, upper back pain was reported by 108 (39.7%), with moderate pain being most common. Pain was significantly more prevalent among females, those with >5 years of office work, sitting or computer use ≥6 hours/day, no regular exercise, and no/occasional sitting breaks. Higher odds were observed for female sex (OR 1.78), >5 years of office work (OR 1.88), prolonged sitting (OR 1.81), no regular exercise (OR 2.41), and no/occasional breaks (OR 2.26), indicating important occupational and lifestyle associations.

Conclusion: Upper back pain was common among sedentary office workers, with prolonged sitting, longer office work duration, lack of regular exercise, and inadequate sitting breaks showing important associations. Promoting ergonomic practices, regular physical activity, and frequent breaks may help reduce the burden of upper back pain and improve workplace health.

Keywords: Upper Back Pain, Sedentary Office Workers, Prevalence, Computer use, physical exercise.

INTRODUCTION

Sedentary behavior has become an important occupational health concern, particularly among office workers who spend prolonged periods sitting and performing desk- or computer-based tasks. Prolonged sedentary behavior combined with low physical activity may increase the risk of non-communicable diseases and premature mortality [1,2]. Sedentary behavior (SB) refers to activities performed while sitting, reclining, or lying with an energy expenditure of ≤1.5 METs, whereas physical activity (PA) involves skeletal muscle movement that increases energy expenditure. High levels of SB are associated with increased mortality risk, while regular PA promotes health and reduces this risk [3,4].

In addition to their broader health effects, prolonged sedentary work and computer use are associated with work-related musculoskeletal disorders (MSDs). Office and computer-based workers are frequently exposed to ergonomic risk factors, including sustained static postures, awkward positioning, repetitive activities, and prolonged computer use, which may affect the neck, shoulders and back and consequently impair comfort, functioning, and work productivity [5,6]. Objective assessments have demonstrated substantial amounts of daily sitting among office-based workers, with prolonged sedentary exposure occurring across both workdays and non-workdays [7]. Occupational factors, including the duration of office work and characteristics

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of the working environment, may further influence the risk of musculoskeletal symptoms among office workers [8].

Upper back pain is a common but relatively under-recognized occupational musculoskeletal problem affecting the thoracic region. Prolonged sitting, computer use, poor posture, and muscular fatigue may increase thoracic strain. Among sedentary office workers, forward head posture, rounded shoulders, and sustained static sitting can further contribute to upper back pain [9,10]. Other potentially relevant factors include physical inactivity, prolonged working hours, occupational stress, and inadequate ergonomic conditions [3,7]. The increasing prevalence of remote and hybrid work has introduced additional ergonomic challenges, as longer working hours, poorly designed workstations, and forward-bent postures have been associated with increased musculoskeletal pain [11-13]. Upper back pain may consequently impair concentration, work efficiency, physical functioning, and quality of life, while increasing healthcare use and absenteeism.

The burden of musculoskeletal symptoms among sedentary workers is also relevant in Bangladesh. A study among sedentary, monotonous urban workers in Dhaka reported upper back pain in 43.5% of participants, while low back pain and neck pain were reported in 55.5% and 48.0%, respectively [14]. Although these findings indicate a substantial burden of upper back pain among sedentary workers, evidence specifically focusing on sedentary office workers and the occupational characteristics associated with upper back pain remains limited. Understanding the magnitude of this problem and identifying potentially modifiable occupational and lifestyle factors may help inform workplace-based preventive and ergonomic strategies.

Therefore, this study was undertaken to determine the prevalence of upper back pain among sedentary office workers and to examine its association with selected sociodemographic and occupational characteristics, including duration of office work, daily sitting and computer-use duration, regular physical exercise, and breaks during prolonged sitting. The findings are intended to provide context-specific evidence that may support appropriate ergonomic and preventive interventions for reducing the burden of upper back pain among sedentary office workers.

MATERIALS AND METHODS

Study design and setting

A prospective cross-sectional study was conducted among sedentary office workers attending or working at the Department of Physical Medicine and Rehabilitation, Bangladesh Medical University (BMU), Dhaka, Bangladesh, from July 2025 to June 2026. The study was designed to determine the prevalence of upper back pain and to assess its association with selected sociodemographic and occupational characteristics among sedentary office workers.

Study population and participants

Office workers who spent a substantial proportion of their working day in a seated position and routinely used computers or other desk-based workstations were considered eligible. Participants were included if they were aged 20 years or older and had been engaged in office-based work for at least one year. Participants with a history of major spinal trauma or surgery, known spinal deformity, inflammatory rheumatological disease, neurological disorders affecting the upper limb or trunk, or other diagnosed conditions that could independently cause upper back pain were excluded.

Sample size and sampling

A total of 272 office workers were included in the final analysis. Participants meeting the eligibility criteria were recruited using a convenient sampling approach during the study period. All eligible participants who consented to participate were assessed using a structured data collection form.

Data collection

Data were collected through face-to-face interviews and clinical assessment. Information was obtained regarding age, sex, duration of office work, daily sitting duration, daily computer-use duration, regular physical exercise, and frequency of breaks during prolonged sitting. Daily sitting duration and computer use were categorized as <6 hours or ≥6 hours per day. Duration of office work was categorized as ≤5 years or >5 years. Regular physical exercise and sitting breaks were recorded as yes/no variables.

Assessment of upper back pain

Upper back pain was defined as pain or discomfort located in the upper thoracic/interscapular region occurring during the study assessment period. Participants were asked whether they had experienced upper back pain and, if present, were further assessed regarding frequency, duration, and intensity of pain. Pain intensity was assessed using a 10-point Numerical Rating Scale, with scores of 1–3 considered mild, 4–6 moderate, and 7–10 severe pain. The primary outcome of the study was the presence or absence of upper back pain.

Statistical analysis

Data were analyzed using statistical software. Continuous variables were summarized as mean ± standard deviation, while categorical variables were presented as frequencies and percentages. The prevalence of upper back pain was calculated as the proportion of participants reporting upper back pain among all study participants.

Associations between upper back pain and categorical sociodemographic or occupational variables were assessed using the chi-square test. Odds ratios (ORs) with 95% confidence intervals (CIs) were calculated to quantify the strength of associations between selected

risk factors and upper back pain. A two-sided *p* value of <0.05 was considered statistically significant.

RESULTS

Characteristics of the study participants

Table 1 shows total of 272 sedentary office workers were included in the study. The mean age of the participants was 35.1 ± 8.0 years. The largest proportion of participants belonged to the 31–40-year age group (53.3%). There were 124 (45.6%) male and 148 (54.4%) female participants. Regarding occupational characteristics, 162 (59.6%) participants had been engaged in office-based work for more than 5 years. Most participants, 192 (70.6%), reported sitting for ≥6 hours per day, while 182 (66.9%) reported using a computer for ≥6 hours daily. Only 78 (28.7%) participants reported regular physical exercise, and 112 (41.2%) reported taking regular breaks during prolonged sitting.

Table 1. Sociodemographic and occupational characteristics of the study participants (N=272)

Variable	Category	n (%)
Age	20–30 / 31–40 / >40	70 (25.7) / 145 (53.3) / 57 (21.0)
Sex	Male / Female	124 (45.6) / 148 (54.4)
Office work	≤5 / >5 years	110 (40.4) / 162 (59.6)
Sitting/day	<6 / ≥6 hours	80 (29.4) / 192 (70.6)
Computer use/day	<6 / ≥6 hours	90 (33.1) / 182 (66.9)
Exercise	Yes / No	78 (28.7) / 194 (71.3)
Breaks	Yes / No/occasionally	112 (41.2) / 160 (58.8)

Prevalence of upper back pain

Table 2 presents the 272 participants, 108 (39.7%) reported upper back pain, whereas 164 (60.3%) reported no upper back pain. Among the 108 participants with upper back pain, 65 (60.2%) reported occasional pain and 43 (39.8%) reported frequent or persistent pain. The mean pain intensity was 4.8 ± 1.7 on a 10-point Numerical Rating Scale. Moderate pain (4–6) was the most frequently reported category, accounting for 57 (52.8%) participants with upper back pain.

Table 2. Prevalence and characteristics of upper back pain among the study participants

	Variable	Frequency (%)
Upper back pain	Yes	108 (39.7)
	No	164 (60.3)
Frequency of pain among participants with pain (n=108)	Occasional	65 (60.2)
	Frequent/persistent	43 (39.8)
	Pain intensity, mean ± SD	4.8 ± 1.7
Pain intensity among participants with pain (n=108)	Mild (1–3)	31 (28.7)
	Moderate (4–6)	57 (52.8)
	Severe (7–10)	20 (18.5)
Duration of upper back pain (n=108)	<3 months	43 (39.8)
	3–6 months	29 (26.9)
	>6 months	36 (33.3)

Association between participant characteristics and upper back pain

Table 3 shows upper back pain was more common among female participants than males (45.9% vs. 32.3%, p=0.022). Participants who sat for ≥6 hours/day also had a higher prevalence of pain than those sitting for <6 hours/day (43.8% vs. 30.0%, p=0.035). Similarly, pain was more frequent among those using computers for ≥6 hours/day (44.0% vs. 31.1%, p=0.042). Participants without regular physical exercise had a higher prevalence of upper back pain than those who exercised regularly (45.4% vs. 25.6%, p=0.003). Those taking regular sitting breaks had a lower prevalence of pain than those taking breaks occasionally or not at all (28.6% vs. 47.5%, p=0.002). Upper back pain was also more common among participants with >5 years of office work (45.7% vs. 30.9%, p=0.015). No significant association was observed between age group and upper back pain (p=0.127).

Table 3. Association of sociodemographic and occupational characteristics with upper back pain (N=272)

Characteristics	Upper back pain, n (%)	No upper back pain, n (%)	*p* value
Age group (years)			
20–30 (n=70)	22 (31.4)	48 (68.6)	**0.127**
31–40 (n=145)	58 (40.0)	87 (60.0)	
>40 (n=57)	28 (49.1)	29 (50.9)	
Sex			
Male (n=124)	40 (32.3)	84 (67.7)	**0.022**
Female (n=148)	68 (45.9)	80 (54.1)	
Duration of office work			
≤5 years (n=110)	34 (30.9)	76 (69.1)	**0.015**
>5 years (n=162)	74 (45.7)	88 (54.3)	
Daily sitting duration			
<6 hours (n=80)	24 (30.0)	56 (70.0)	**0.035**
≥6 hours (n=192)	84 (43.8)	108 (56.3)	
Daily computer use			
<6 hours (n=90)	28 (31.1)	62 (68.9)	**0.042**
≥6 hours (n=182)	80 (44.0)	102 (56.0)	
Regular physical exercise			
Yes (n=78)	20 (25.6)	58 (74.4)	**0.003**
No (n=194)	88 (45.4)	106 (54.6)	
Regular breaks during prolonged sitting			
Yes (n=112)	32 (28.6)	80 (71.4)	**0.002**
No/occasionally (n=160)	76 (47.5)	84 (52.5)	

P values were calculated using the chi-square test.

Factors associated with upper back pain

Table 4 shows the magnitude of association was further assessed using odds ratios. Participants who sat for ≥6 hours per day had approximately 1.81 times higher odds of experiencing upper back pain compared with those who sat for <6 hours per day (OR 1.81, 95% CI 1.03–3.19). Participants who used a computer for ≥6 hours daily had higher odds of upper back pain than those with shorter computer use (OR 1.74, 95% CI 0.98–3.10). Female participants had higher odds of reporting

upper back pain than male participants (OR 1.78, 95% CI 1.05–3.02). The odds were also higher among participants who had worked in an office setting for >5 years (OR 1.88, 95% CI 1.09–3.23) and among those who did not engage in regular physical exercise (OR 2.41, 95% CI 1.31–4.42). Participants who did not take regular breaks during prolonged sitting had approximately 2.26 times higher odds of experiencing upper back pain compared with those who took regular breaks (OR 2.26, 95% CI 1.34–3.80).

Table 4. Odds ratios for selected factors associated with upper back pain

Factor	OR	95% CI	*p* value
Female sex	1.78	1.05–3.02	0.033
Office work >5 years	1.88	1.09–3.23	0.023
Sitting ≥6 hours/day	1.81	1.03–3.19	0.039
Computer use ≥6 hours/day	1.74	0.98–3.10	0.058
No regular physical exercise	2.41	1.31–4.42	0.005
No/occasional sitting breaks	2.26	1.34–3.80	0.002

DISCUSSION:

In the present study, most participants were aged 31–40 years, with females comprising 54.4%. More than half (59.6%) had worked for >5 years, while 70.6% sat and 66.9% used computers for ≥6 hours daily. Only 28.7% performed regular physical exercise and 41.2% took regular breaks. Similarly, an Indian study among IT professionals reported that 86.3% worked with computers for 6–9 hours daily, with pain reported by 43.18% of females and 34.85% of males; daily computer use and exercise were significantly associated with pain (p=0.029 and p<0.01, respectively) [15]. A Bangladeshi study also reported limited physical activity, with only 22% of professionals exercising regularly and 78% not exercising [16].

In the present study, 39.7% of participants reported upper back pain, with 60.2% experiencing occasional and 39.8% frequent/persistent pain. The mean pain intensity was 4.8 ± 1.7, with moderate pain being most common. In comparison, a recent study among software professionals reported a lower prevalence of upper back symptoms (29.2%) over the previous 12 months, while the lower back, neck, and shoulder were more commonly affected (66.7%, 56.9%, and 44.4%, respectively) [17]. The higher prevalence in our study may be related to prolonged sitting and computer use among sedentary office workers.

Upper back pain was significantly more common among females, those with >5 years of office work, sitting ≥6 hours/day, and computer use ≥6 hours/day. Regular exercise and sitting breaks were associated with lower pain prevalence. Similarly, a Bangladeshi study reported upper back symptoms in 47.6% of computer users, with greater symptoms among those using computers for >6 hours/day and those not taking regular breaks; workstation and seating deficiencies were also associated with musculoskeletal symptoms [18].

In the present study, female sex, longer office work duration, prolonged sitting, lack of regular exercise, and no/occasional breaks were associated with higher odds of upper back pain. These findings are consistent with previous studies identifying prolonged sitting, extended computer use, inadequate physical activity, and poor ergonomic practices as important risk factors for musculoskeletal complaints [14–18]. These findings emphasize the importance of regular exercise, ergonomic practices, and frequent breaks in reducing upper back pain among sedentary office workers.

Overall, Upper back pain was common among sedentary office workers and was associated with prolonged sitting, computer use, inadequate exercise, and insufficient breaks.

CONCLUSION:

Upper back pain was a common musculoskeletal problem among sedentary office workers, affecting nearly two-fifths of participants. Prolonged sitting, longer duration of office work, lack of regular physical exercise, and inadequate sitting breaks were associated with a higher burden of pain. These findings highlight the need for workplace-based ergonomic interventions, regular physical activity, appropriate work-rest schedules, and frequent breaks during prolonged sitting to help prevent upper back pain and promote the health, comfort, and productivity of sedentary office workers.

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