

Research Article**Prevalence of Neck Pain and Its Association with Sedentary Lifestyle in Office Workers****Dr. Md. Abul Kalam Azad^{1*}, Dr. Md. Nadim Kamal², Dr. Abdullah Al Mamun³, Dr. Azizur Rahman⁴, Dr. Sheikh Farhad⁵, Dr Erfanul Haque Siddique⁶**¹Medical Officer, Department of Physical Medicine & Rehabilitation, Bangabandhu Sheikh Mujib Medical University, Dhaka, Bangladesh²Research Assistant, Department of Physical Medicine & Rehabilitation, Bangabandhu Sheikh Mujib Medical University, Dhaka, Bangladesh³Medical Officer, Department of Physical Medicine & Rehabilitation, Sylhet MAG Osmani Medical College, Bangladesh⁴Medical Officer, Department of Physical Medicine & Rehabilitation, Mymensingh Medical College, Bangladesh⁵Medical Officer, Department of Orthopedics, Bangabandhu Sheikh Mujib Medical University, Dhaka, Bangladesh⁶Medical Officer, Department of Orthopedics, Bangabandhu Sheikh Mujib Medical University, Dhaka, Bangladesh***Corresponding author**

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Abstract: Introduction: Younger adults generally have less sedentary time than older, where a significant increase is seen between ages 30 and 70. Total sitting time is associated with a higher risk for cardiometabolic disease and mortality. Neck pain and physical activity could influence these associations. **Objective:** This cross-sectional study assessed the prevalence of neck pain and its association with a sedentary lifestyle in office workers. **Methodology:** This cross-sectional study involved 92 self-reported patients. It assessed sitting duration and break frequency at work, along with factors like general health, back and neck pain, exercise, leisure sitting, diet, smoking, stress, and BMI. Occupations were categorized by education requirements. Logistic regression was used to analyze the relationship between workplace sitting, break frequency, and poor health outcomes. **Results:** Sitting for 75% of the time or less at work is linked to significantly lower risks of poor general health (OR 0.50–0.65) and back or neck pain (OR 0.82–0.87). For those sitting half their working hours or more, taking breaks from sitting occasionally reduced these risks even further, with ORs ranging from 0.40 to 0.50 for poor health and 0.74 to 0.81 for neck pain. **Conclusions:** Prolonged sitting at work without breaks increases the risk of neck pain. Individuals should take regular breaks, exercise, and limit leisure time spent sitting.

Keywords: Sedentary lifestyle, work breaks, exercise, health risk, working population, self-reported health.

INTRODUCTION

Chronic pain has become an increasingly prevalent condition, carrying various individual and epidemiological implications. Beyond its clinical significance for an individual's health status, autonomy, and quality of life [1], there has been a notable decline in physical activity at work over the last fifty years, accompanied by a rise in sitting time [2, 3]. For instance, pain symptoms are among the most common reasons for individuals seeking healthcare services [1], and treatment for neck and back pain represents a significant portion of healthcare expenditures, which have surged in the last decade [4]. However, the broader social impact of chronic pain on the general population remains unclear, particularly concerning its association with worker absenteeism. A recent systematic review focused on the European workplace provides evidence that chronic pain adversely affects work-related outcomes [5]. In Spain, research by Langley *et al.*, [6] indicated that individuals with chronic pain missed work 40% more frequently and were 30% more likely to report reduced productivity

compared to those without such symptoms. Nevertheless, this study was conducted using an internet sample, which may limit the applicability of its findings across all occupational categories in the Spanish population [6]. Sedentary time, when adjusted for physical activity levels, is linked to a higher risk of cardiovascular disease, cancer, diabetes, and mortality. Taking breaks from prolonged sitting or reducing overall sedentary time can mitigate some of the negative health effects associated with sedentary behaviour [8, 9]. A systematic review identified few significant associations, except for a link between sitting time at work and lower back pain [10]. However, most studies have examined total sedentary time, leaving gaps in our understanding of how sitting in various contexts—such as during work or leisure—affects health. Self-reported general health, encompassing an individual's perception of their overall physical and mental well-being, is associated with all-cause mortality and morbidity [11, 12]. Over the past few decades, reports of poor self-reported general health have increased significantly across all age and education

groups within the working population in Sweden [13]. The objective of this study was to explore how the amount of time spent sitting at work and the frequency of breaks from sitting are related to self-reported general health and self-reported neck pain. Ethical clearance and written consent were assured before the study.

Objectives

- **General objective:** The primary aim of this study was to evaluate the prevalence of neck pain among the Bangladeshi working population.
- **Specific objective:** This study targeted to evaluate the prevalence and association of neck pain with a sedentary lifestyle among the Bangladeshi working population.

METHODOLOGY

This 12-month cross-sectional study included a total of 130 patients diagnosed with and self-reported neck pain who visited the Physical Medicine & Rehabilitation, BSMMU, Dhaka, Bangladesh, from January 2014 to December 2014. However, only 92 patients finally completed the inclusion criteria. The present study included all adult patients of 18 years to 60 years.

- **Inclusion criteria:** The current study included adult patients who were aged between 18 to 60 years, office workers and reported neck pain for more than 15 days.
- **Exclusion criteria:** Patients who were suffering from migraine or cardiovascular diseases, became pregnant during the study, left the study and over 60 were excluded from this study.

The sample was divided into subgroups based on gender (men/women), SSYK level (occupations requiring higher education versus not), exercise habits

(no weekly exercise versus regular weekly exercise), and leisure time sitting (high sitting time at 50% or more versus low sitting time below 50%). Odds ratios (ORs) and 95% confidence intervals (CIs) were calculated using logistic regression to assess the relationship between decreasing levels of workplace sitting and poor general health or back/neck pain, adjusting for age, sex, SSYK, diet, smoking, work stress, overall stress, BMI, leisure sitting, and exercise. Trends in workplace sitting levels were tested with Kruskal–Wallis ANOVA for continuous data and chi-square tests for ordinal data. Additional logistic regression models evaluated the association between workplace sitting, frequency of breaks, and poor health outcomes. Significance was defined by a p-value of less than 0.05. All analyses were performed using IBM SPSS (version 25). The hospital authority gave ethical clearance and well-informed written consent was ensured before the study.

RESULT

A total of 92 participants (42% women and 58% men) with a mean age of 32.1 years (ranging from 18 to 60) were analyzed. Participants' characteristics, based on their sitting habits at work, are shown in Table 1. Notably, 72% reported sitting for at least half of their working day. Those who sat for 25% to 75% of their work time had a significantly lower risk of back and neck pain compared to those who sat all the time (odds ratio: 0.82–0.87). This finding remained significant for those sitting 50% to 75% of the time after adjusting for lifestyle factors and leisure sitting (odds ratio \leq 0.89) [Table 2]. There was also a link between frequently reporting back or neck pain and a lower frequency of breaking up sitting every 30 minutes. Participants who broke up their sitting occasionally or more often showed a significantly lower odds ratio compared to those who seldom broke up their sitting (odds ratio: 0.74–0.81). This association stayed significant, even after accounting for lifestyle factors and exercise (odds ratio: 0.83–0.90) [Table 3].

Table-1: Characteristics of the study patients in relation to sedentary habits at work.

Variables	Almost all time	75% of the time	50% of the time	25% of the time	Almost no time	p-Value
	n = 16	n= 26	n = 22	n = 20	n = 8	
Men (%)	53%	56%	60%	60%	62%	0.001
Women (%)	47%	44%	40%	40%	38%	0.001
Mean age (years)	30.4 (10.9)	32.0 (11.3)	33.0 (11.5)	32.5 (12.2)	32.1 (11.6)	0.001
BMI (kg.m ⁻²)	25.8 (4.7)	26.0 (4.6)	26.4 (4.5)	26.6 (4.6)	26.5 (4.6)	0.001
SSYK (1 to 3)	72%	69%	60%	40%	21%	0.001
Regular exercise (21 times/week)	65%	72%	69%	66%	57%	0.001
Diet (Good/excellent)	64%	68%	68%	66%	68%	0.001
Smoking (never)	77%	86%	87%	82%	78%	0.001
Breaking up sitting at work (Seldom/Never)	26%	13%	5%	4%	4%	0.001
Low SED in spare time (< 50% of the time)	42%	49%	54%	61%	64%	0.001
Perceived Health (Very poor/poor)	10.10%	6.80%	6.50%	7.00%	6.30%	0.001
Perceived Back/Neck pain (Very often/often)	22%	19%	19%	21%	22%	0.001
Perceived stress at work (Very often/often)	23%	20%	18%	18%	21%	0.001

Table-2: Odds ratio (95% CI) for having poor perceived health and often perceived neck pain, respectively, compared to the level of sitting at work

Almost all time		75% of the time	50% of the time	25% of the time	Almost no time
n = 16		n= 26	n = 22	n = 20	n = 8
Perceived poor or very poor health					
Model 1	1 (ref)	0.65 (0.58-0.72)	0.60 (0.54-0.67)	0.60 (0.54-0.67)	0.50 (0.42-0.61)
Model 2	1 (ref)	0.70 (0.63-0.77)	0.68 (0.60-0.77)	0.69 (0.61-0.78)	0.57 (0.46-0.71)
Model 3	1 (ref)	0.76 (0.68-0.86)	0.78 (0.69-0.88)	0.82 (0.72-0.93)	0.67 (0.53-0.83)
Perceived back/neck pain often or very often					
Model 1	1 (ref)	0.85 (0.79-0.91)	0.82 (0.76-0.88)	0.87 (0.81-0.94)	0.92 (0.82-1.04)
Model 2	1 (ref)	0.88 (0.82-0.94)	0.87 (0.81-0.94)	0.93 (0.86-1.00)	0.98 (0.87-1.10)
Model 3	1 (ref)	0.89 (0.83-0.96)	0.89 (0.82-0.96)	0.95 (0.88-1.03)	1.00 (0.89-1.14)

Table-3: Breaking up sitting at work every 30 min by at least standing up

Seldom/Never		Occasionally	Often	Very often
n = 11		n = 21	n = 24	n = 12
Perceived poor or very poor health				
Model 1	1 (ref)	0.50 (0.45-0.56)	0.44 (0.39-0.49)	0.40 (0.35-0.47)
Model 2	1 (ref)	0.62 (0.54-0.71)	0.59 (0.52-0.68)	0.55 (0.46-0.64)
Model 3	1 (ref)	0.67 (0.59-0.77)	0.69 (0.60-0.78)	0.65 (0.55-0.77)
Perceived back/neck pain often or very often				
Model 1	1 (ref)	0.81 (0.74-0.88)	0.74 (0.68-0.81)	0.76 (0.69-0.84)
Model 2	1 (ref)	0.89 (0.81-0.97)	0.83 (0.76-0.91)	0.87 (0.78-0.96)
Model 3	1 (ref)	0.90 (0.82-0.98)	0.85 (0.78-0.93)	0.90 (0.81-1.00)

DISCUSSION

The main findings of this study indicate that sitting for prolonged periods at work, along with not taking breaks during work hours, is associated with an increased risk of self-reported poor general health and back/neck pain. Those who minimise sitting at work significantly reduce their risk of perceiving poor health. For individuals who sit for at least half of their workday, taking regular breaks from sitting results in significantly lower risks of both poor health and pain, compared to those who never take breaks. This aligns with other research on total sitting time and sedentary behavior, which shows that high self-reported total sitting time negatively impacts health-related quality of life [14, 15]. Additionally, specific sitting behaviors in different contexts, such as leisure time, show relevance to back and neck pain. Notably, individuals who sit almost no time at work, while having high leisure time sitting, report a lower risk of neck pain compared to those who sit almost all the time at work.

The influence of age highlighted in this analysis is consistent with previous studies. For instance, in Ontario, Canada, workers aged 20 to 39 are more likely to experience work absenteeism due to neck pain compared to older adults [16]. Furthermore, poorer self-rated health and mental health conditions are significant factors contributing to a higher likelihood of extended absenteeism (more than 30 days) among those with migraines [17]. In fact, pain-related anxiety can increase disability for individuals suffering from headaches, and major depression is associated with a three-fold higher risk of absenteeism [18].

In addition to considering health status, accounting for the use of analgesics has proven beneficial in understanding the causes of chronic pain [19]. The results of this study regarding differences based on sex and education levels align with findings from a European study [20], which reported fewer musculoskeletal symptoms in men and individuals with higher education. The lower risk of perceived back pain in men, regardless of the amount of time spent sitting, can be attributed to the generally lower prevalence of back pain in men compared to women [21].

Studies have been conducted on various groups, including students, workers, and the general population. It can be argued that the impact of physical activity levels may differ across different age groups, particularly between adolescents and adults. This seems to be true regarding neck pain. When the effects of physical activity were analysed separately for workers and school children, there was limited evidence of an association in workers, while strong evidence indicated no association in students. Workers often engage in physically demanding tasks, adopt awkward postures, and lead sedentary lifestyles, whereas adolescents typically do not face these issues [22-24]. Epidemiological studies have shown that maintaining awkward postures for extended periods, combined with a sedentary lifestyle, is associated with neck pain. Therefore, increasing physical activity levels in workers could be beneficial in preventing neck pain. However, the preventive effect of increased physical activity may not be as significant for adolescents, who usually do not remain in awkward positions and tend to be more physically active than adults [25-27]. Consequently, future research should

focus more specifically on the study population and consider the impact of work status on physical activity.

CONCLUSION

Both sitting for long periods at work and not taking breaks are linked to an increased risk of experiencing self-reported poor general health and neck pain. To lower the risk of poor health outcomes, it is essential to reduce both total sitting time and prolonged sitting at work and during leisure activities. This reduction is important for both men and women and individuals who do not exercise regularly, as it can help decrease the likelihood of reporting poor health and/or neck and back pain.

Limitations of the study: A small population and short study duration may affect the overall outcome of the study.

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