



Prevalence of neck pain and disability in officials of Mumbai Municipal Corporation in department of municipal secretary using Neck Disability Index

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Abstract

Aim: To study the prevalence of neck pain and disability in officials of Mumbai Municipal Corporation (MMC) in Department of Municipal Secretary using Neck Disability Index

Objective: To screen the population for prevalence of neck pain in Officials of Mumbai Municipal Corporation (MMC) in Department of Municipal Secretary using Nordic Musculoskeletal Questionnaire and study the prevalence of neck disability in officials of Mumbai Municipal Corporation (MMC) in Department of Secretary using Neck Disability Index

Methodology: The methodology for this Cross-Sectional Survey study involved a convenience sampling method with a sample size of 150 participants for screening. The study was conducted at the Mumbai Municipal Corporation (MMC) Head office and wards, Mumbai, with a duration of 6 months.

Inclusion criteria for participants were government officials aged 25 to 58 years, working 6 to 8 hours per day in the Department of Municipal Secretary, with at least one year of experience in similar settings. Only those who report neck pain and are willing to participate will be included.

Exclusion criteria encompassed individuals with a recent neck injury due to fall or trauma, a history of cervical surgery, any neurological or psychiatric disorders, or other musculoskeletal complaints apart from neck pain.

The instrumentation used for data collection included a Consent form, Information sheet, Nordic Musculoskeletal Questionnaire (Screening), Neck Disability Index. The outcome measures in the study were prevalence of neck pain, NDI score and % ADL.

This research aimed to study the prevalence of neck pain and disability in officials of Mumbai Municipal Corporation (MMC) in Department of Municipal Secretary using Neck Disability Index over a period of six months.

Results: The result of the prevalence of neck pain is, the participants had pain in the neck in the past 12 months out of which for 63 (55.3%) neck pain was troublesome during last 7 days. However, only 23 (20%) participants reported that neck pain prevented them from doing normal work during last 12 months. The result of NDI Score and % ADL Disability was 14.20 ± 7.15 and 29.60 ± 14.60 respectively

Conclusion: This study highlights a high prevalence of neck pain and associated disability among officials working in the Municipal Secretary Department of the Mumbai Municipal Corporation. With 57.9% of participants reporting neck pain in the past year. Notably, while neck pain was more common in the 41-58 age group, younger participants (24-40 years) exhibited higher NDI scores.

Keywords: Neck pain, disability, NDI, %ADL

Introduction

In today's digital work environment, many office workers experience increased neck discomfort and musculoskeletal issues, largely due to prolonged periods spent at desks [1]. Employees in government roles, especially those handling administrative tasks, often remain seated for extended durations, adopting postures that strain the neck and upper back muscles [2]. This concern is particularly relevant in large urban administrative bodies like the Mumbai Municipal Corporation (MMC), one of India's largest local government organizations.

Established under the Mumbai Municipal Corporation Act of 1888, MMC manages civic infrastructure and public services across Mumbai, a city with a population exceeding 20 million. The organization employs nearly 100,000 staff across various departments [3], with a significant portion working in administrative roles. Among these, officers in the Municipal Secretary (MS) Department face heavy workloads that require them to stay at their desks most of the day. Their responsibilities include reviewing documents, drafting official communications, coordinating activities,

and handling sensitive information—tasks that are mainly sedentary and demand sustained concentration.

A typical workday for these officers involves 6 to 8 hours of continuous desk work [4]. Their tasks often require leaning forward, whether they are viewing a computer screen or reading and writing on paper. This posture leads to forward head posture (FHP) and neck flexion, which are biomechanically unfavorable for the cervical spine [5]. Maintaining static, misaligned postures over time puts stress on neck muscles, joints, and soft tissues, potentially causing pain, stiffness, reduced mobility, and, if ignored, long-term disability [6].

While this pattern is common across many office-based professions worldwide, there is limited research specifically on government employees in India, especially within municipal organizations. As bodies like MMC continue to digitize workflows and centralize documentation, employees' desk time is likely to increase. Therefore, understanding how prevalent neck pain and related disabilities are among these workers is crucial for public health and workplace productivity.

To evaluate the functional impact of neck pain, this study utilizes the Neck Disability Index (NDI), a validated self-report questionnaire that assesses perceived disability caused by neck issues. Developed by Vernon and Mior in 1991 [7], the NDI includes 10 items, each scored from 0 to 5, addressing various aspects of daily life affected by neck dysfunction.

These include

- Pain intensity
- Personal care (e.g., washing, dressing)
- Lifting
- Reading
- Headaches
- Concentration
- Work
- Driving
- Sleeping
- Recreation

The cumulative score provides a comprehensive view of how neck pain affects an individual’s quality of life and daily functioning. A total score of 0-4 indicates no disability, 5-14 mild disability, 15-24 moderate, 25-34 severe, and scores above 34 suggest complete neck disability [8]. This gradation helps not only in understanding the severity of the problem but also in tracking progress over time if interventions are introduced.

One of the major strengths of the Neck Disability Index (NDI) lies in its psychometric properties. It has demonstrated excellent reliability, with an Intraclass Correlation Coefficient (ICC) of 0.88 [9], making it a consistent tool across different populations and settings.

Moreover, the Neck Disability Index (NDI) has shown strong construct validity — patients reporting improvements in their condition also showed significant changes in their Neck Disability Index (NDI) scores. It is also a responsive instrument, meaning it is sensitive enough to detect clinically meaningful changes in a patient’s status over time [10].

The Neck Disability Index (NDI) is also highly practical for field studies and workplace health assessments. It is brief, requiring less than five minutes to complete, and does not require any specialized equipment or training to administer, making it ideal for large-scale surveys such as this one [10].

Given the occupational hazards faced by government officers in sedentary roles, and the widespread but underreported nature of neck pain among such populations, this research aims to quantify the problem in a systematic and scientific manner. By focusing on officers from the MS Department of MMC — a representative group within a massive bureaucratic framework this study seeks to identify the prevalence of neck pain and its functional consequences using a standardized and validated instrument.

The results of this study could have significant implications. On an individual level, identifying neck disability early can prompt timely ergonomic corrections, physiotherapy, and preventive interventions, reducing the risk of chronic disability [6]. On an organizational level, the findings could inform policy decisions around workplace ergonomics, desk design, work-break cycles, and even remote work guidelines. For a civic body like MMC, improving the health and productivity of its officers could enhance administrative efficiency and service delivery.

Moreover, this study may serve as a foundational work that encourages similar research across other government departments and even in the private sector. The ultimate goal is to raise awareness of workplace-induced musculoskeletal disorders and promote healthier, more sustainable work environments.

In conclusion, neck pain and associated disability pose a silent but significant challenge for administrative professionals within the Mumbai Municipal Corporation. With increasing reliance on digital tools and prolonged desk work, the problem is likely to intensify if left unaddressed. By using the Neck Disability Index (NDI), this research offers a reliable and practical approach to evaluating the scale of the issue, thereby paving the way for informed interventions that can improve occupational health outcomes.

Hypothesis

There is neck pain and disability in officials of Department of Municipal Secretary in Mumbai Municipal Corporation.

Null Hypothesis

There is no neck pain and disability in officials of Department of Municipal Secretary in Mumbai Municipal Corporation.

Data Analysis and Results

Table 1: Characteristics of participants

Characteristics	Categories	N (%)	Mean ± SD	Median (IQR)
Age (in years)	Overall	114 (100%)	44.29 ± 10.57	48 (35.75 - 54)
	24 - 40 age group	44 (38.60%)	32.52 ± 5.04	33 (29 - 36.75)
	41 - 58 age group	70 (61.40%)	51.69 ± 4.84	53 (49 - 56)
Gender	Overall	Male: 63(55.3%) Female: 51(44.7%)		
	24 - 40 age group	Male: 26(59.1%) Female: 18(40.9%)		
	41 - 58 age group	Male: 37(52.9%) Female: 33(47.1%)		
Years of Experience	Overall	114 (100%)	17.59 ± 10.87	18 (9 - 28.25)
	24 - 40 age group	44 (38.60%)	6.32 ± 4.46	8 (1 - 10)
	41 - 58 age group	70 (61.40%)	24.67 ± 7.02	25 (23 - 31)

SD = Standard Deviation, IQR = Interquartile Range.

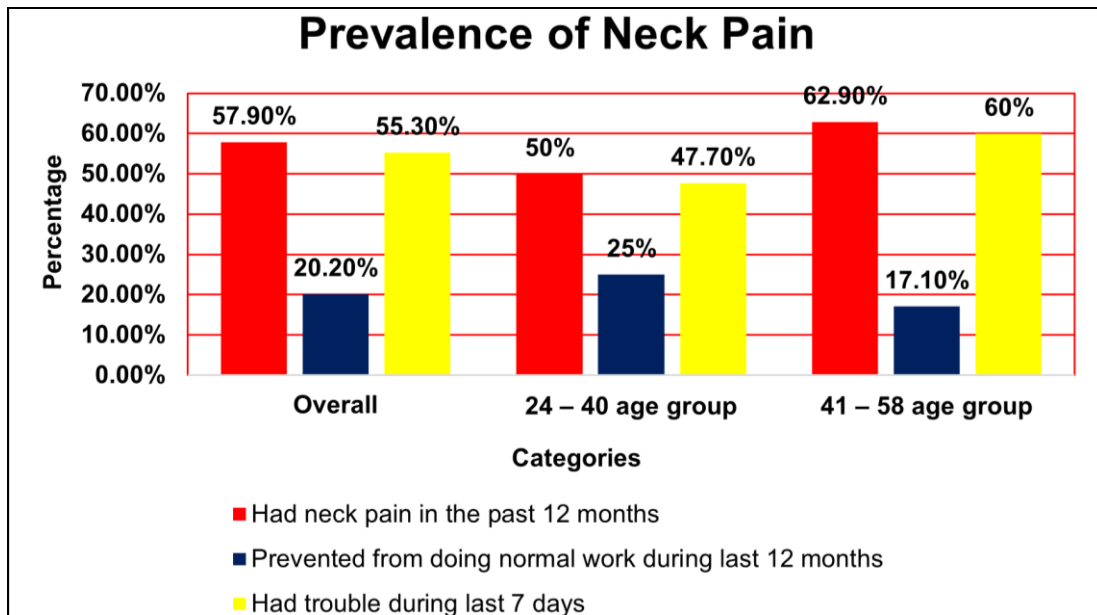
The characteristics of participants are shown in Table 1. The study comprised of 114 participants out of which 63 (55.3%) were male and 51 (44.7%) were female having mean age of 44.29 ± 10.57 years and having a total mean experience of 17.59 ± 10.87 years with majority of the participants having the job profile as stenographer 23 (20.2%) followed by head clerk 13 (11.4%)

Table 2: Prevalence of Neck Pain

Musculoskeletal Discomfort	Categories	Had neck pain in the past 12 months n (%)	Prevented from doing normal work during last 12 months n (%)	Had trouble during last 7 days n (%)
Neck	Overall	66 (57.9%)	23 (20.2%)	63 (55.3%)
	24 - 40 age group	22 (50%)	11 (25%)	21 (47.7%)
	41 - 58 age group	44 (62.9%)	12 (17.1%)	42 (60%)

The result of the prevalence of neck pain is shown in Table 2. Overall, 66 (57.9%) participants had pain in the neck in the past 12 months out of which for 63 (55.3%) neck pain was troublesome during last 7 days. However, only 23 (20%) participants reported that neck pain prevented them from doing normal work during last 12 months. Similar trend was observed when compared across age groups. However, prevalence of neck pain was more in the age group of 41 - 58 years.

The result of the prevalence of neck pain is shown in Graph 1. Overall, 66 (57.9%) participants had pain in the neck in the past 12 months out of which for 63 (55.3%) neck pain was troublesome during last 7 days. However, only 23 (20%) participants reported that neck pain prevented them from doing normal work during last 12 months. Similar trend was observed when compared across age groups. However, prevalence of neck pain was more in the age group of 41 - 58 years.



Graph 1: Prevalence of Neck Pain

Table 3: NDI Score and % ADL Disability

Variable	Categories	Mean ± SD	Median (IQR)
NDI Score	Overall	14.20 ± 7.15	13 (8 - 19)
	24 - 40 age group	16.52 ± 7.59	15 (10.50 - 22)
	41 - 58 age group	13.09 ± 6.74	11.50 (8 - 17)
%ADL Disability	Overall	29.60 ± 14.60	26.60 (16.85 - 41)
	24 - 40 age group	33.97 ± 15.30	33 (22 - 45.20)
	41 - 58 age group	27.52 ± 13.95	24.40 (16 - 35.50)

SD = Standard Deviation, IQR = Interquartile Range.

The result of NDI Score and % ADL Disability is shown in Table 3. Mean NDI Score and % ADL Disability was 14.20 ± 7.15 and 29.60 ± 14.60 respectively. More or less similar results were observed across age groups. However, the mean score was higher in the age group 24 - 40 years when compared across age groups for both the parameters.

Discussion

This cross-sectional study aimed to assess the prevalence of neck pain and disability among officials in the Department of Municipal Secretary, Mumbai Municipal Corporation (MMC), using the Neck Disability Index (NDI). The findings support the hypothesis that neck pain and disability are common in this administrative workforce. Computer office workers spend a great amount of time in front of

computers, and neck and shoulder problems have increased as a result [2, 12].

Out of 114 participants, 57.9% reported neck pain in the past 12 months, and 55.3% experienced symptoms in the past 7 days, while 20.2% reported activity limitations due to neck pain. These findings are consistent with previous research on musculoskeletal pain among office workers [6, 2]. Prevalence of neck pain among office workers is higher than in the general community [6]. The high prevalence reflects the repetitive strain due to long sitting hours, forward head posture and ergonomic challenges faced in office-based jobs.

Although neck pain was more prevalent in the 41-58 years age group, the younger age group (24-40 years) demonstrated higher mean Neck Disability Index scores and

Activity of daily living disability percentages, suggesting they may be more functionally affected. This may be due to longer screen exposure and poor postural habits among younger workers^[2]. The results are comparable to findings in military and hospital administrative staff, where prolonged sitting and static postures were major risk factors for neck disorders^[11, 1]. Holding the neck in a semi-flexed position for a long duration increases the risk of developing neck pain. The neck and upper back muscles are required to provide stability to the 'moving' arms, hands and fingers, which in turn leads to muscle tension and repetitive strain. Prolonged sitting posture affects the natural curvature of the spine while also increasing the pressure on vertebral discs, ligaments, and muscles.

Causal association of prolonged computer use and neck pain is already established^[13]. Factors such as awkward postures, repetitive work and aggravation of previous pain episodes are reported to contribute to Work-Related Neck pain (WRNP)^[6]. Females are more affected by neck pain than males^[14]. The reason may be that women have a higher musculoskeletal load and report symptoms more often. Neck pain-related disability has a health and economic impact both at the individual and community levels^[5].

Office workers exposed to poor ergonomic conditions are also more likely to experience muscle imbalance and scapular dysfunction, contributing to chronic pain^[2]. Additional risk factors like neck flexion, repetitive movement, and psychosocial stressors have also been linked with neck pain, as supported by longitudinal and observational studies^[5]. These patterns have been observed not only in international cohorts but also in Indian IT professionals and government workers^[4].

Limitations

Despite the valuable insights, this study has several limitations. Firstly, the convenience sampling technique may limit the generalizability of the findings to the broader population of municipal workers. Secondly, the cross-sectional design restricts causal inferences; longitudinal studies would be beneficial in tracking the progression of neck pain and its impact on work productivity over time. Additionally, self-reported questionnaires, while practical, may introduce recall bias or subjective variability in responses.

Conclusion

This study highlights a high prevalence of neck pain and associated disability among officials working in the Municipal Secretary Department of the Mumbai Municipal Corporation. With 57.9% of participants reporting neck pain in the past year. Notably, while neck pain was more common in the 41- 58 age group, younger participants (24-40 years) exhibited higher Neck Disability Index scores.

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