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Original Article

The Prevalence of Forward Head Posture Among Office Workers Using Craniovertebral Angle (CVA) Measured with Goniometer: A Cross-Sectional Study

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ABSTRACT

Background: Forward head posture is a common cervical postural deviation among desk-based workers and may contribute to altered cervical loading, neck discomfort, and reduced musculoskeletal efficiency. Prolonged computer use and limited ergonomic awareness may increase postural strain in office environments. Objective: To determine the prevalence and severity distribution of forward head posture among office workers using goniometric craniovertebral angle measurement and to examine its association with selected demographic, occupational, lifestyle, and symptom-related factors. Methods: This cross-sectional observational study included 157 office workers aged 18–50 years who used computers for at least six hours daily. Craniovertebral angle was measured using a universal goniometer, with forward head posture defined as an angle below 50°. Data were analyzed using SPSS version 26. Frequencies and percentages summarized participant characteristics and posture categories, while chi-square testing assessed associations with selected variables. Results: Forward head posture was present in 134 participants, yielding an overall prevalence of 85.4%. Mild forward head posture was most frequent 89 (56.7%), followed by moderate 42 (26.8%) and severe 3 (1.9%) categories. Significant associations were observed with age group ($p = 0.047$), gender ($p = 0.050$), and neck pain history ($p = 0.045$), while work experience, daily computer use, and physical activity were not statistically significant. Conclusion: Forward head posture was highly prevalent among office workers, predominantly in mild and moderate forms. Early screening, ergonomic education, and preventive exercise strategies are recommended to reduce cervical postural burden in desk-based occupational settings. Keywords: Forward Head Posture; Craniovertebral Angle; Office Workers; Ergonomics; Neck Pain; Posture.

INTRODUCTION

Correct body posture is an essential component of musculoskeletal health because it supports biomechanical efficiency, reduces unnecessary tissue loading, and helps maintain functional alignment during occupational and daily activities. Optimal upright posture has been described as an indicator of movement-system health, whereas sustained postural deviation may contribute to altered joint loading, muscular imbalance, and discomfort, particularly in individuals exposed to prolonged static positions (1). Although the concept of a single "standard posture" has been questioned, postural assessment remains clinically relevant when it is used to identify measurable deviations associated with pain, disability, or occupational strain rather than to label normal anatomical variation as pathological (2). From a functional perspective, posture represents the interaction between skeletal

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alignment, muscular control, proprioceptive input, and behavioural demands, and prolonged deviation from efficient alignment may increase mechanical stress on the cervical and thoracic regions (3).

Forward head posture is one of the most frequently observed postural deviations of the cervical region and is characterized by anterior translation of the head relative to the trunk, commonly accompanied by lower cervical flexion and compensatory upper cervical extension. This altered alignment shifts the head anterior to the body's line of gravity and increases the mechanical load borne by cervical extensor muscles and passive soft tissues (4). Abnormal positioning of the head and neck may influence cervical spine biomechanics by modifying spinal curvature, increasing compressive loading, altering muscle activation patterns, and affecting neuromuscular control, all of which may contribute to neck pain, stiffness, and functional limitation (5). Forward head posture has also been linked with prolonged computer use, smartphone use, carrying loads, headache, mouth breathing, and repetitive or sustained occupational activities involving the upper limbs and shoulder girdle (6).

Office workers represent an important population for postural screening because their work commonly requires prolonged sitting, sustained visual attention to screens, repetitive keyboard or mouse use, and workstation arrangements that may encourage forward head positioning. Bending the neck forward, rotating the neck during work tasks, maintaining poor sitting positions, and performing repetitive manual activities have all been associated with neck and shoulder musculoskeletal complaints (7). Extended computer-based work is particularly relevant because many office environments involve long workdays with limited movement breaks and variable ergonomic support, increasing the likelihood of sustained static loading of the cervical spine (8). In such populations, early identification of forward head posture may help guide ergonomic education, exercise-based prevention, and referral for physiotherapy assessment before chronic symptoms or functional limitations develop.

The craniovertebral angle is widely used as a quantitative indicator of head and neck posture. It is formed by the intersection of a horizontal line passing through the seventh cervical vertebra and a line connecting the seventh cervical vertebra to the tragus of the ear in the sagittal plane; smaller craniovertebral angle values indicate greater anterior head translation and more pronounced forward head posture (9). Prior studies have used different thresholds to classify postural severity, which makes consistent operational definition essential when estimating prevalence. In the present study, craniovertebral angle was classified using non-overlapping categories, with normal posture defined as ≥50°, mild forward head posture as 40.0°–49.9°, moderate forward head posture as 30.0°–39.9°, and severe forward head posture as <30°. This classification provides a clinically interpretable framework for estimating both overall prevalence and severity distribution among office workers.

Existing literature suggests that forward head posture is common across populations exposed to prolonged device use and sedentary routines. A regional estimate has suggested a high prevalence of forward head posture in Asian populations, although prevalence varies according to age group, setting, measurement method, and diagnostic threshold (10). Studies among school-going children have also reported measurable levels of forward head posture, indicating that postural deviation may begin early and persist or worsen with sustained screen exposure and sedentary habits (11). In addition, evidence from conservative management literature indicates that manual therapy, postural correction, and targeted exercise interventions may improve cervical alignment and symptoms among individuals with forward head posture, supporting the clinical value of early detection and prevention in at-risk groups (12).

Despite increasing concern regarding sedentary work and computer-related musculoskeletal problems, local evidence on the prevalence and associated factors of forward head posture among office workers remains limited. In particular, there is a need for studies that quantify forward head posture using a defined craniovertebral angle protocol and examine its relationship with demographic, occupational, ergonomic, and symptom-related variables. Therefore, this study aimed to determine the prevalence

and severity distribution of forward head posture among office workers using goniometric craniovertebral angle measurement and to examine its association with selected participant characteristics, including gender, age group, work experience, daily computer use, physical activity, neck pain history, and ergonomic awareness.

MATERIALS AND METHODS

This cross-sectional observational study was conducted among office workers to estimate the prevalence of forward head posture and assess its association with selected demographic, occupational, lifestyle, ergonomic, and symptom-related factors. The study followed an observational design because the objective was to measure existing postural status without assigning an intervention or exposure. Reporting was aligned with the principles of the Strengthening the Reporting of Observational Studies in Epidemiology framework to improve transparency in study design, participant selection, measurement, and analysis (13). The study was carried out in office-based settings in Karachi, including call centres, software companies, banking offices, administrative offices, and e-teaching environments, where employees routinely performed desk-based computer work for prolonged periods.

Participants were recruited using non-probability purposive sampling from eligible office departments. The target population consisted of office workers aged 18–50 years who had been employed for at least six months, worked at least five days per week, and used a computer for a minimum of six hours per working day. Individuals were eligible when their occupational routine involved sustained desk-based work and they were willing to provide written informed consent. Individuals with a history of major accident, cervical or spinal injury, previous surgical treatment affecting the neck or spine, or conditions limiting safe postural assessment were excluded to reduce the likelihood that craniovertebral angle measurements reflected prior trauma or surgical alteration rather than occupational postural exposure. This eligibility structure was selected to focus the analysis on adults with sustained computer-based occupational exposure, consistent with previous work examining forward head posture in physically demanding and occupational populations (14).

The sample size was calculated using OpenEpi software with a 95% confidence level and 5% margin of error, yielding a minimum required sample of 157 participants (15). After eligibility screening, participants were informed about the study purpose, assessment procedure, voluntary nature of participation, confidentiality safeguards, and their right to withdraw before data collection. Written informed consent was obtained before enrolment. Each participant was assigned a coded identifier, and data were recorded without personally identifying information in the analytical dataset.

Data collection included demographic characteristics, occupational variables, lifestyle factors, ergonomic awareness, neck pain history, and objective craniovertebral angle measurement. Demographic variables included age and gender. Occupational variables included job role, work experience, and daily computer use, categorized as 6–8 hours and >8 hours. Lifestyle and symptom-related variables included physical activity status, history of neck pain, and ergonomic awareness. Physical activity was categorized as regular, irregular, or none according to participant report. Ergonomic awareness was recorded as present when the participant reported prior awareness of correct workstation posture, monitor positioning, chair adjustment, or ergonomic principles relevant to desk-based work. Forward head posture was the primary outcome variable and was operationally defined using the craniovertebral angle, with smaller angle values indicating greater anterior displacement of the head.

Craniovertebral angle was measured objectively using a universal goniometer. The anatomical landmarks used for measurement were the tragus of the ear and the spinous process of the seventh cervical vertebra. The seventh cervical vertebra was identified by palpation, and the angle was determined from the line connecting C7 to the tragus relative to a horizontal line passing through C7

in the sagittal plane. Participants were assessed in a standardized natural head posture to reduce positional measurement variability. The recorded craniovertebral angle was classified into four non-overlapping categories: normal posture was defined as ≥50°, mild forward head posture as 40.0°–49.9°, moderate forward head posture as 30.0°–39.9°, and severe forward head posture as <30°. These categories were used consistently for prevalence estimation and severity classification. Individuals with craniovertebral angle values below 50° were classified as having forward head posture. Participants with prior accident, injury, or surgery were excluded because these factors may independently alter head and neck alignment and confound occupational postural assessment (16). The use of craniovertebral angle as a quantitative measure of head posture is supported by previous measurement literature describing its application for identifying forward head posture and comparing postural alignment across adults (17).

Potential sources of bias were addressed through predefined eligibility criteria, standardized anatomical landmarks, objective goniometric measurement, coded data entry, and use of consistent craniovertebral angle categories across all analyses. Selection bias was minimized by recruiting participants from multiple types of office settings rather than a single workplace category. Measurement bias was reduced by applying the same craniovertebral angle procedure to all participants and by using an anatomical landmark-based approach. Confounding was considered by collecting relevant demographic, occupational, lifestyle, ergonomic, and symptom-related variables, including gender, age group, work experience, daily computer use, physical activity, neck pain history, and ergonomic awareness. These variables were selected because they may plausibly influence both occupational postural exposure and the presence of forward head posture.

Data were entered and analyzed using SPSS version 26. Descriptive statistics were used to summarize participant characteristics and craniovertebral angle classification. Categorical variables were presented as frequencies and percentages. Overall prevalence of forward head posture was calculated as the proportion of participants with craniovertebral angle <50°, while severity-specific prevalence was calculated for mild, moderate, and severe categories. Associations between forward head posture and selected categorical variables were assessed using the chi-square test, with Fisher's exact test considered when expected cell counts were insufficient for valid chi-square interpretation. Statistical significance was set at $p < 0.05$. Where association testing involved ordered or multi-category variables, degrees of freedom were reported according to the number of categories included in the contingency table. Missing or incomplete responses were checked during data entry, and available complete data were used for analysis. Data integrity was supported through coded participant records, secure storage, consistency checks during entry, and anonymous reporting of aggregate results.

Ethical approval was obtained from the Institutional Ethical Review Board of Foundation of Indus University under Protocol Number IERB–01/U/AHS-DPT/25-26/011. All procedures were conducted in accordance with ethical principles for research involving human participants, including voluntary participation, informed consent, confidentiality, and anonymous reporting. The study followed the principles of the Declaration of Helsinki for ethical conduct in medical research involving human participants (18).

RESULTS

A total of 157 office workers were included in the analysis. The sample consisted predominantly of males, with 112 male participants representing 71.3% of the study population, while 45 participants were female, representing 28.7%. Most participants were young adults, as 113 participants (72.0%) were aged 18–28 years, 35 (22.3%) were aged 29–39 years, and 9 (5.7%) were aged 40–50 years. Occupational distribution showed that the largest proportion of participants belonged to job roles categorized as "other" 111 (70.7%), followed by IT workers 20 (12.7%), administrative workers 19 (12.1%), HR workers 4 (2.5%), and finance workers 3 (1.9%). Most participants were unmarried 111 (70.7%), while 43 (27.4%)

were married and 3 (1.9%) were categorized as other marital status. Regarding occupational exposure, 88 participants (56.1%) had 1–3 years of work experience, 39 (24.8%) had 4–6 years, and 30 (19.1%) had 7–9 years. Daily computer exposure was high across the sample, with 73 participants (46.5%) reporting 6–8 hours of computer use per day and 84 (53.5%) reporting more than 8 hours. Physical activity patterns were nearly evenly distributed, with 51 participants (32.5%) reporting regular physical activity, 51 (32.5%) reporting irregular physical activity, and 55 (35.0%) reporting no physical activity. Neck pain was reported by 43 participants (27.4%), whereas 114 (72.6%) reported no neck pain. Only 33 participants (21.0%) reported ergonomic awareness, while 124 (79.0%) had no ergonomic awareness, indicating limited workplace-posture knowledge in the study population (Table 1).

Table 1. Demographic, Occupational, Lifestyle, and Symptom Characteristics of Participants (n = 157)

Variable	Category	Frequency (n)	Percentage (%)
Gender	Male	112	71.3
	Female	45	28.7
Age group	18–28 years	113	72.0
	29–39 years	35	22.3
	40–50 years	9	5.7
Job role	IT	20	12.7
	Administrative	19	12.1
	HR	4	2.5
	Finance	3	1.9
	Other	111	70.7
Marital status	Unmarried	111	70.7
	Married	43	27.4
	Other	3	1.9
Work experience	1–3 years	88	56.1
	4–6 years	39	24.8
	7–9 years	30	19.1
Daily computer use	6–8 hours	73	46.5
	>8 hours	84	53.5
Physical activity	Regular	51	32.5
	Irregular	51	32.5
	None	55	35.0
Neck pain	Yes	43	27.4
	No	114	72.6
Ergonomic awareness	Yes	33	21.0
	No	124	79.0

Forward head posture was assessed using craniovertebral angle measurement. Of the 157 office workers, 23 participants (14.6%) had a normal craniovertebral angle of ≥50°, while 134 participants (85.4%) had forward head posture, defined as craniovertebral angle <50°. Severity classification showed that mild forward head posture was the most frequent category, affecting 89 participants (56.7%). Moderate forward head posture was observed in 42 participants (26.8%), while severe forward head posture was present in 3 participants (1.9%). These findings indicate that more than four out of every five office workers in the study demonstrated some degree of forward head posture, with the overall burden being driven mainly by mild and moderate postural deviation (Table 2).

Table 2. Craniovertebral Angle Classification and Severity of Forward Head Posture Among Office Workers (n = 157)

Craniovertebral Angle Category	Frequency (n)	Percentage (%)
Normal posture	23	14.6
Mild forward head posture	89	56.7
Moderate forward head posture	42	26.8
Severe forward head posture	3	1.9
Total	157	100.0

Association analysis showed statistically significant relationships between forward head posture and selected participant characteristics. Gender was significantly associated with forward head posture, with a Pearson chi-square value of 3.84 and a borderline statistically significant p-value of 0.050. Age group was also significantly associated with forward head posture, with $\chi^2 = 6.12$, df = 2, and p = 0.047,

indicating that the distribution of forward head posture differed across age categories. History of neck pain showed a statistically significant association with forward head posture, with $\chi^2 = 21.35$, df = 12, and p = 0.045, suggesting that participants with neck pain history differed in forward head posture classification compared with those without neck pain. Years of work experience was not significantly associated with forward head posture ($\chi^2 = 2.75$, df = 2, p = 0.253), and physical activity also did not reach statistical significance, although it approached the conventional threshold ($\chi^2 = 5.41$, df = 2, p = 0.067). Daily computer use was not statistically associated with forward head posture when the p-value was recalculated from the reported χ^2 statistic and degrees of freedom ($\chi^2 = 0.98$, df = 1, p = 0.322). (Table 3).

Table 3. Association Between Forward Head Posture and Participant Characteristics (n = 157)

Association Tested	Pearson Chi-Square (χ^2)	df	p-value
Gender × Forward Head Posture	3.84	1	0.050
Age Group × Forward Head Posture	6.12	2	0.047
Years of Work Experience × Forward Head Posture	2.75	2	0.253
Daily Computer Use × Forward Head Posture	0.98	1	0.322
Physical Activity × Forward Head Posture	5.41	2	0.067
History of Neck Pain × Forward Head Posture	21.35	12	0.045

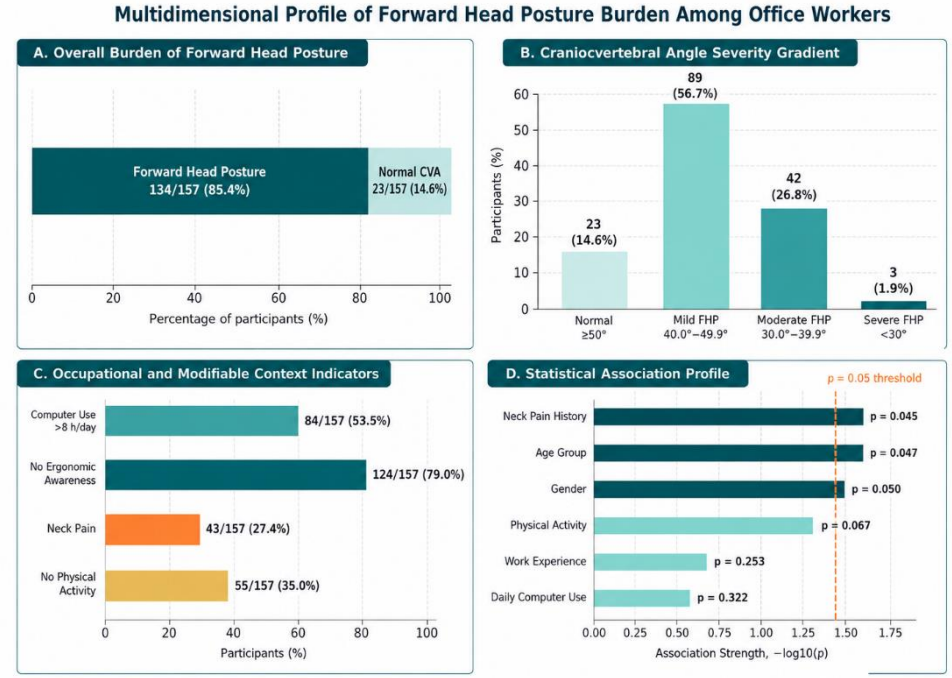

Figure 1. Multidimensional profile of forward head posture burden among office workers. Panel A shows the overall prevalence of forward head posture using craniovertebral angle <50°. Panel B presents the severity distribution using non-overlapping craniovertebral angle categories. Panel C summarizes occupational and modifiable context indicators, including prolonged computer use, ergonomic awareness, neck pain, and physical inactivity. Panel D displays the statistical association profile for selected participant characteristics using reported or corrected p-values, with p = 0.05 as the reference threshold.

The panelled figure demonstrates that forward head posture was present in 134 of 157 office workers, yielding an overall prevalence of 85.4%, while only 23 participants (14.6%) had normal craniovertebral angle values. Severity distribution showed that mild forward head posture was the dominant category, affecting 89 participants (56.7%), followed by moderate forward head posture in 42 participants (26.8%) and severe forward head posture in only 3 participants (1.9%), indicating that most postural deviation clustered within clinically modifiable severity levels. Contextual indicators showed a high-risk sedentary work profile, with 84 participants (53.5%) reporting more than 8 hours of daily computer use, 124 (79.0%) lacking ergonomic awareness, 55 (35.0%) reporting no physical activity, and 43 (27.4%) reporting neck pain. The statistical association panel further showed that age group (p = 0.047), neck pain history (p = 0.045), and gender (p = 0.050) were the variables most closely associated with forward head posture, whereas work experience (p = 0.253), corrected daily computer use analysis

(p = 0.322), and physical activity (p = 0.067) did not meet the conventional threshold for statistical significance.

Overall, the results demonstrate a high prevalence of forward head posture among office workers, with 134 of 157 participants affected. Mild forward head posture accounted for the largest proportion of cases, affecting 89 participants, while moderate and severe categories collectively affected 45 participants. The participant profile indicates that the sample was mostly young, male, unmarried, early-career, and exposed to prolonged daily computer use. Although more than half of the participants reported more than 8 hours of daily computer use, this variable was not statistically associated with forward head posture based on the corrected chi-square interpretation. In contrast, gender, age group, and neck pain history showed statistically significant associations, indicating that forward head posture in this sample may be more closely related to demographic and symptom-related patterns than to computer-use duration alone. The low level of ergonomic awareness, observed in only 21.0% of participants, remains clinically relevant despite the absence of complete inferential statistics, because it reflects a potentially modifiable workplace factor for preventive postural education.

DISCUSSION

This cross-sectional study found a high prevalence of forward head posture among office workers, with 134 of 157 participants classified as having forward head posture based on a craniovertebral angle below 50°. The overall prevalence of 85.4% indicates that forward head posture was highly common in this office-based sample, while only 14.6% of participants demonstrated normal craniovertebral angle values. Severity analysis further showed that most affected participants were clustered within mild and moderate categories, with mild forward head posture observed in 89 participants (56.7%) and moderate forward head posture in 42 participants (26.8%), whereas severe forward head posture was uncommon, affecting only 3 participants (1.9%). This distribution is clinically important because mild and moderate postural deviations may represent a potentially modifiable stage in which ergonomic education, postural correction, strengthening, stretching, and movement-break strategies may help reduce progression toward more persistent cervical dysfunction.

The high prevalence observed in this study is consistent with the growing recognition that prolonged desk-based work and sustained screen exposure may contribute to altered head and neck alignment in sedentary populations. Office workers commonly maintain static sitting postures for extended periods, often with repeated or sustained visual fixation on screens, keyboard use, and limited postural variation. Although the cross-sectional design does not allow causal inference, the occupational profile of the sample provides a plausible context for the observed postural burden. More than half of the participants reported using a computer for more than 8 hours daily, and nearly four-fifths reported no ergonomic awareness, suggesting that prolonged exposure to desk-based work occurred in an environment where knowledge of workstation posture and preventive practices was limited. However, daily computer use was not statistically associated with forward head posture after correction of the inconsistent p-value reported in the original table, indicating that duration of computer use alone may not fully explain postural deviation. This finding suggests that qualitative aspects of exposure, such as monitor height, chair and desk configuration, frequency of breaks, visual ergonomics, sitting behaviour, and individual musculoskeletal conditioning, may be more informative than computer-use duration alone.

The present findings are broadly comparable with previous research showing that forward head posture is common among young and sedentary populations exposed to prolonged study or screen-based routines. Goswami and Contractor reported a high prevalence of forward head posture among physiotherapy students and associated it with prolonged study hours and increased screen time, which supports the relevance of sustained forward-oriented postural demands in younger populations (19).

Although physiotherapy students and office workers differ in occupational context, both groups may experience extended periods of sitting, reading, and screen use, which may explain the similarity in postural risk patterns. The predominance of younger adults in the present sample, particularly the 18–28-year age group, also indicates that forward head posture is not restricted to older workers or those with long occupational exposure. Instead, postural deviation may emerge early in professional life, especially when desk-based work begins before adequate ergonomic habits are established.

The significant association between age group and forward head posture suggests that postural alignment varied across the age categories included in this study. However, without subgroup-specific cross-tabulated counts, the direction and magnitude of this relationship cannot be interpreted fully. The finding should therefore be treated as an indication of age-related variation rather than evidence that a specific age group has a higher risk. Possible explanations may include differences in work routines, adaptive postural habits, duration of occupational exposure, physical activity patterns, or symptom awareness across age groups. Similarly, gender showed a borderline statistically significant association with forward head posture. This finding may reflect differences in workstation design, body dimensions, occupational role distribution, muscle endurance, activity patterns, or reporting behaviour, but the present data do not permit a definitive explanation. Future studies should present gender-stratified prevalence values and consider adjusted analysis to determine whether gender remains associated with forward head posture after accounting for age, job role, computer exposure, ergonomic awareness, and neck pain.

History of neck pain was significantly associated with forward head posture in this study, supporting the clinical relevance of postural assessment in office workers with cervical symptoms. Abnormal head and neck alignment may alter cervical loading, increase muscle demand, and affect neuromuscular control, while pain itself may also influence posture through protective guarding, reduced movement, or altered proprioception. Because the study was cross-sectional, it cannot determine whether forward head posture contributed to neck pain or whether participants with neck pain adopted altered head posture. Nevertheless, the observed association reinforces the need to include postural screening when evaluating office workers with neck discomfort. Previous evidence has emphasized the importance of identifying and managing posture-related mechanical neck pain, and posture-correction interventions remain a relevant preventive and rehabilitative strategy for individuals with forward head posture (20).

Physical activity did not reach statistical significance in association testing, although its p-value approached the conventional threshold. This may indicate that physical activity patterns influence postural health but were not captured with sufficient precision in the present categorical assessment. The broad categories of regular, irregular, and no physical activity may not reflect exercise type, frequency, intensity, duration, adherence, or whether activity specifically targeted cervical, scapular, or thoracic strength and mobility. Exercise-based approaches have been recommended in the management of forward head posture, particularly those involving postural correction, stretching, strengthening, and movement control (21). Therefore, future research should use more detailed physical activity instruments and distinguish general activity from targeted therapeutic or preventive exercise. Such refinement may clarify whether specific exercise patterns are protective against forward head posture among office workers.

The finding that ergonomic awareness was low in the study population is clinically relevant even though exact inferential statistics for its association with forward head posture were not available in the provided results. Only 21.0% of participants reported ergonomic awareness, while 79.0% lacked such awareness. This suggests a substantial educational gap in workplace postural health. However, awareness alone may not be sufficient to prevent forward head posture unless it is translated into correct workstation setup, behavioural change, regular breaks, and sustained adherence. The absence of complete association statistics also limits interpretation, and future studies should measure ergonomic exposure more objectively, including monitor height, screen distance, chair support, desk

height, keyboard and mouse position, sitting duration without breaks, and availability of workplace ergonomic policies.

This study has several strengths. It addressed a practical occupational health problem in a population exposed to prolonged desk-based work and used craniovertebral angle measurement as an objective indicator of head posture. The inclusion of demographic, occupational, lifestyle, ergonomic, and symptom-related variables allowed a broader description of factors potentially related to forward head posture. The sample size of 157 participants provided adequate descriptive precision for estimating prevalence in the studied setting, and the classification of craniovertebral angle into non-overlapping severity categories improved interpretability of the postural burden.

The study also has limitations that should be considered when interpreting the findings. The cross-sectional design prevents causal inference, so associations between forward head posture and variables such as age, gender, and neck pain should not be interpreted as directional or causal. The use of non-probability purposive sampling may limit generalizability to all office workers, particularly those from different cities, workplace types, or ergonomic environments. Some variables, including physical activity, ergonomic awareness, and neck pain history, were self-reported and may be affected by recall or reporting bias. The measurement protocol used goniometric craniovertebral angle assessment, but the study would be strengthened by reporting repeated measurements, assessor training, intra-rater reliability, inter-rater reliability, calibration procedures, and standardized participant positioning. The association analysis was also limited by the absence of cross-tabulated frequencies and effect sizes, preventing interpretation of the magnitude and direction of associations. In addition, potential confounders were not adjusted using multivariable analysis, and important occupational variables such as workstation setup, break frequency, psychosocial stress, screen height, chair ergonomics, and visual strain were not assessed.

CONCLUSION

This study demonstrated a high prevalence of forward head posture among office workers, with 85.4% of participants showing craniovertebral angle values below 50°. Mild forward head posture was the most common severity category, followed by moderate forward head posture, while severe forward head posture was relatively uncommon. Significant associations were observed between forward head posture and age group, gender, and history of neck pain, whereas work experience, daily computer use, and physical activity did not show statistically significant associations in the corrected analysis. The findings highlight forward head posture as an important occupational health concern in desk-based workers and support the need for early postural screening, ergonomic education, regular movement breaks, and preventive exercise strategies to reduce cervical musculoskeletal burden in office environments.

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