Research Article

Association Between Neck Pain Intensity and Neck-Related Disability Among Clinical BDS Students: A Cross-Sectional Correlational Study

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Abstract

Background: Dental students undertaking clinical procedures may be exposed to sustained and awkward working postures that place repeated mechanical demands on the cervical region. Neck pain may interfere with daily activities and clinical performance.

Objective: To examine the association between neck pain intensity and neck-related disability among clinical Bachelor of Dental Surgery (BDS) students.

Methods: An observational cross-sectional correlational study was conducted from February to August 2024. A total of 100 clinical BDS students aged 20–26 years with a history of work-related neck pain were recruited through convenience sampling from Dasmesh Institute of Research and Dental Sciences, Faridkot. Pain intensity was assessed using the Numeric Rating Scale (NRS), and neck-related disability was assessed using the 10-item Neck Disability Index (NDI). Pearson's product-moment correlation was used to examine the relationship between pain intensity and disability.

Results: There was a significant positive co-relation between Neck Pain and Neck Disability Index (r= 0.73).

Conclusion: Among the selected clinical BDS students with a history of work-related neck pain, higher pain intensity was strongly associated with greater neck-related disability. These findings highlight the importance of ergonomic awareness and early preventive strategies in clinical dental training.

Keywords: BDS students, dental students, neck pain, Numeric Rating Scale, Neck Disability Index, musculoskeletal disorders, ergonomics.

INTRODUCTION

Dentistry is a demanding profession that requires concentration, precision, fine motor coordination and prolonged maintenance of specific working postures. Dental students are frequently exposed to occupational risk factors such as sustained static postures, repetitive movements, awkward positioning of the neck and upper extremities, and prolonged working hours during clinical procedures.

Musculoskeletal disorders (MSDs) are among the commonly reported occupational health problems in dental professionals. These disorders may affect the cervical spine, shoulders, back and upper extremities. The repetitive nature of dental procedures and the requirement to maintain a fixed posture for better visibility and accessibility within the oral cavity may contribute to the development of musculoskeletal symptoms.

Neck pain is one of the frequently reported complaints among dental practitioners and students. Previous studies have identified prolonged static posture, inadequate ergonomic practices, repetitive movements and insufficient rest breaks as potential contributing factors to work-related neck pain.

Alexopoulos et al. (2004) reported a considerable burden of musculoskeletal disorders among dentists. Similarly, Dhanya et al. (2013) investigated musculoskeletal disorders among dental practitioners and their influence on professional practice. Kumar et al. (2013) conducted a national cross-sectional survey in India and reported work-related musculoskeletal complaints among dental practitioners.

Dental students may also experience musculoskeletal discomfort during their clinical training because of prolonged working hours and inadequate ergonomic awareness. Sardar et al. (2014) investigated work-related musculoskeletal pain among dental students at Dow University of Health Sciences, Karachi.

Pain intensity alone does not adequately describe the functional consequences of neck pain. The Neck Disability Index (NDI) is a commonly used questionnaire to assess the functional limitations associated with neck disorders. It evaluates activities such as personal care, lifting, reading, concentration, work, driving, sleeping and recreation.

Understanding the relationship between neck pain intensity and neck-related disability is important for identifying the functional burden of musculoskeletal symptoms among dental students.

Therefore, the present study was conducted to examine the association between neck pain intensity and neck-related disability among clinical BDS students.

AIM AND OBJECTIVES

Aim

To examine the relationship between neck pain intensity and neck-related disability among clinical BDS students.

Objective

To determine the association between Numeric Rating Scale scores and Neck Disability Index scores among clinical BDS students.

MATERIALS AND METHODS

Study Design

The study was conducted using an observational cross-sectional correlational research design to examine the relationship between neck pain intensity and neck-related disability among clinical BDS students.

Source of Subjects

The subjects were recruited from the Dasmesh Institute of Research and Dental Sciences, Faridkot, Punjab, India.

Study Duration

The study was conducted from February 2024 to August 2024.

Sample Size

A total of 100 clinical BDS students participated in the study.

Sampling Technique

Convenience sampling was used to recruit participants who fulfilled the inclusion and exclusion criteria and were willing to participate in the study.

Inclusion Criteria

Male and female participants, Age group between 20 and 26 years , Participants with a history of work-related neck pain, Participants involved in clinical dental work for more than six hours per day.

Exclusion Criteria

History of trauma involving the neck or spine, History of malignancy, Recent fracture, Vertebrobasilar insufficiency, Rheumatoid arthritis, Cervical radiculopathy, Diabetes mellitus, Diagnosed spondylolisthesis, Vertigo or dizziness.

Use of analgesics or other conservative treatment during the preceding six weeks.

Outcome Measures

1. Numeric Rating Scale (NRS)

The Numeric Rating Scale was used to assess the intensity of neck pain. Participants rated their pain on a scale ranging from 0 to 10, where:

- 0 represents no pain.
- 10 represents the worst imaginable pain.

Higher scores indicate greater pain intensity.

2. Neck Disability Index (NDI)

The Neck Disability Index is a validated questionnaire used to assess neck-related functional disability. It consists of 10 sections, including:

Pain intensity Personal care Lifting Reading

Headaches Concentration Work Driving

Sleeping Recreation

Each section is scored from 0 to 5, giving a maximum total score of 50. Higher scores indicate greater neck-related disability.

Procedure

The participants were informed about the purpose and procedure of the study. Written informed consent was obtained before data collection.

Eligible participants were asked to complete the self-administered questionnaire, Numeric Rating Scale and Neck Disability Index.

The collected information was recorded in the master chart for statistical analysis.

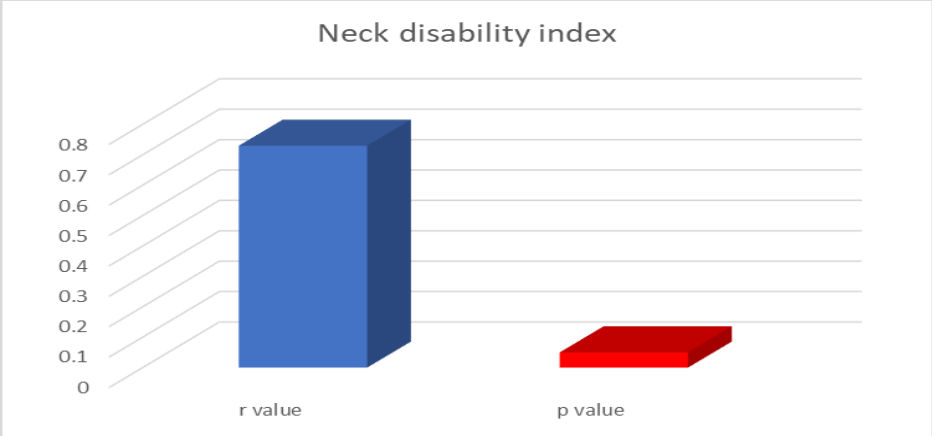
RESULTS

A total of 100 clinical BDS students were included in the study. Among them, 49 (49%) were males and 51 (51%) were females.

The Statistical Analysis was done using SPSS (version16). Karl Pearson's correlation analysis was conducted

Table 1. Relationship between Neck Pain and Neck Disability Index

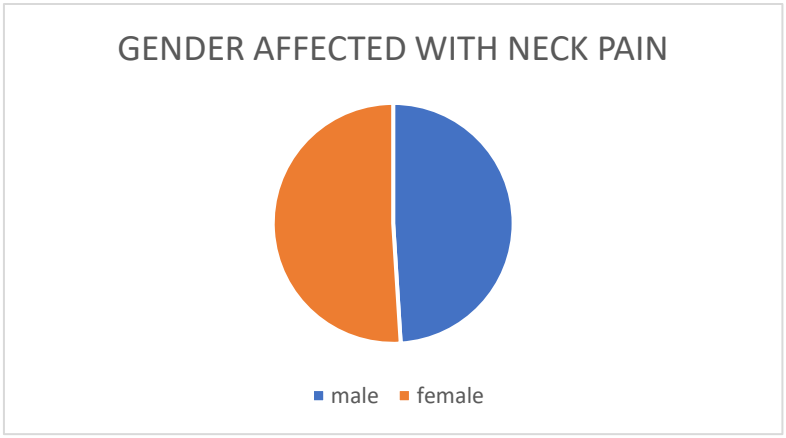
S.NO.	PARAMETERS	r value	p value
1.	NECK DISABILITY INDEX	0.73	0.05



Graph 1. Describes the relationship between neck Pain and Neck Disability Index. There was a significant positive co-relation between neck Pain and Neck Disability Index (r= 0.73).

Table 2. Gender Distribution of Participants

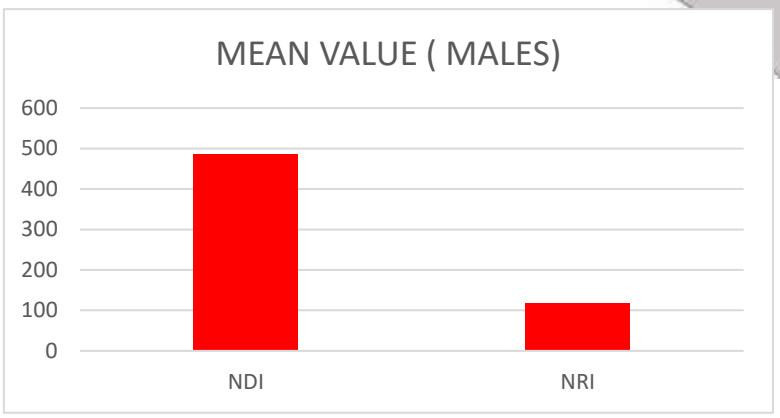
Gender	Frequency	Percentage
Male	49	49%
Female	51	51%
Total	100	100%



Graph 2. Representation of frequency of gender involved.

Table 3. Comparison of mean value of NDI and NRI in Males

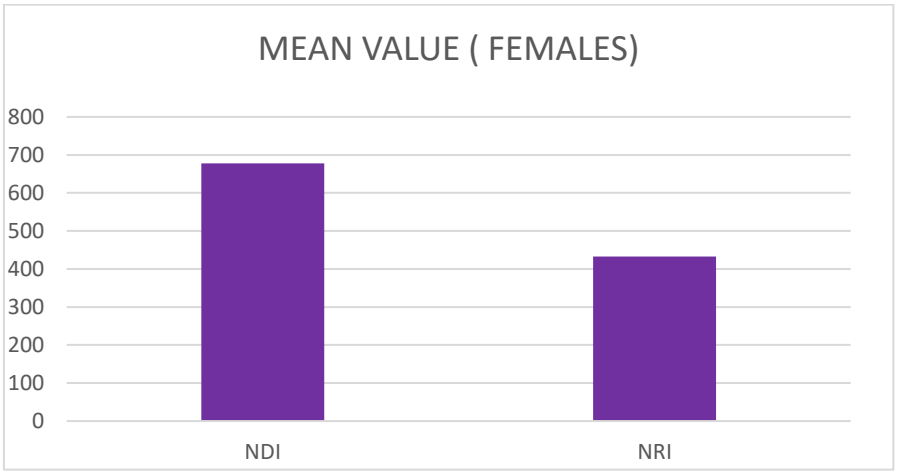
DISABILITY	MEAN VALUE
NDI	486
NRI	117



Graph 3. Representation of mean values of NDI and NRI in Males

Table 4. Comparison of mean value of NDI and NRI in Females

DISABILITY	MEAN VALUE
NDI	678
NRI	433



Graph 4. Representation of mean value of NDI and NRI in Females

DISCUSSION

The present study aimed to evaluate neck pain intensity, the level of neck-related disability, and the relationship between these two variables among dental students. The findings demonstrated a statistically significant positive correlation between neck pain intensity and the Neck Disability Index (NDI). This indicates that participants reporting greater neck pain intensity also tended to experience higher levels of functional disability. These findings suggest that increasing neck pain may be associated with greater limitations in daily activities among dental students.

The findings are broadly consistent with previous research conducted by Zaheda (2011), Dhanya et al. (2013), Shinde et al. (2014), and Sardar et al. (2014), which examined neck-related problems and disability among dental professionals. Zaheda (2011), in a study investigating neck problems among dentists in Baghdad, reported that approximately 24% of participants had missed work due to neck-related problems. This finding highlights the potential occupational impact of neck disorders on professional functioning.

Similarly, Shinde et al. (2014), who assessed the prevalence of neck pain and associated factors among dentists in Mumbai, reported varying levels of disability based on Neck Pain Disability Index scores. Approximately 43% of participants experienced mild disability, 31% moderate disability, and 22% reported no disability. The study also identified occupational factors associated with neck pain, including more than

ten years of dental practice, working over 50 hours per week, and taking two or fewer breaks per working day. These findings emphasize the importance of occupational exposure and work-related practices in the development of neck-related musculoskeletal problems.

The findings of the present study, together with previous research, highlight the importance of identifying occupational and ergonomic factors that may contribute to neck pain and functional disability among dental students and practitioners. Prolonged clinical working hours, sustained working postures, inadequate breaks, and poor ergonomic practices may contribute to musculoskeletal discomfort. However, these factors were not directly established as causes of neck pain in the present study and require further investigation.

Overall, the study demonstrates a significant positive association between neck pain intensity and neck-related disability among the participants. This emphasizes the need for early identification of neck problems, ergonomic education, appropriate postural practices, and preventive strategies during dental clinical training. Further research involving larger samples and assessment of specific occupational and ergonomic risk factors is recommended to develop effective preventive and management strategies.

Limitations of the Study

1. The study was conducted in a single institution.
2. Convenience sampling was used.
3. The study had a relatively small sample size for broader generalisation.
4. The outcome measures were self-reported and may have been affected by response bias.
5. Detailed objective ergonomic and postural assessments were not included.
6. The cross-sectional design does not establish causality.
7. The total number of students screened, including those without neck pain, was not available; therefore, prevalence in the overall BDS student population could not be established.

CONCLUSION

The present study demonstrated a strong positive correlation between neck pain intensity and neck-related disability among clinical BDS students.

The findings indicate that participants experiencing higher levels of neck pain also tended to experience greater functional disability.

This highlights the importance of recognizing work-related musculoskeletal symptoms during clinical dental training. Ergonomic education, appropriate working postures, regular rest breaks and early preventive strategies may help address the occupational musculoskeletal burden among dental students.

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