

A STUDY TO ASSESS THE PREVALENCE OF LOW BACK PAIN AND ITS RELATION TO QUALITY OF LIFE AND DISABILITY AMONG DENTISTS IN SOUTH BENGALURU

Physiotherapy

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ABSTRACT

Background and objectives: Dentists often face health issues from working habits, repetitive tasks, and uncomfortable postures, leading to musculoskeletal disorders, stress, and reduced productivity. QOL is a serious concern, particularly as job demands expose dentists to stressful conditions that contribute to musculoskeletal problems. This study aims to evaluate the prevalence of low back pain among dentists in south Bengaluru and its correlation with QOL and disability. **Methods:** This study includes dentists with 10 years of experience, recruited based on specific criteria, totalling 40 subjects. The Oswestry low back pain disability questionnaire and WHOQOL BREF questionnaire were used to correlate LBP with QOL among the subjects. **Results:** A cross-sectional study of 40 dentists with minimum 10 years of experience, aged 35 to 55 years (average 40.48 years), included 55% male and 45% female participants. They had 10 to 30 years of professional experience on average 15.4 years. Results showed 60% reported no disability, while 38% had mild disability. There was no statistically significant difference in QOL scores between dentists with mild/moderate LBP and those without LBP across all four domains. **Conclusion:** The current cross sectional study concludes that there is no statistically significant difference between QOL in all 4 domains with 40.5% subjects with mild to disability associated with LBP among dentists.

KEYWORDS

Musculoskeletal disorders, Low back pain, Quality of life, Prevalence, Dentistry

INTRODUCTION

Dentistry demands precision, concentration, and excellent hearing, vision, depth perception, and psychomotor skills, along with maintaining job-related postures for prolonged periods.

Declines in these abilities can affect dentists' efficiency and effectiveness.[1]

Musculoskeletal disorders arise from either a single incident or cumulative trauma, causing muscle discomfort or damage to the body's support system. They can hinder daily activities and function.[2]

Dentistry often requires prolonged static postures, with clinical tasks involving awkward postures and repetitive rotation of the head, neck, and torso to one side.[3]

Recent literature shows dental practitioners still experience high rates of musculoskeletal disorders, despite widespread awareness of the occupational health issues [4]

Back discomfort is the foremost occupational health concern identified among dental staff in the United States, prevalence of 38% to 80%.[5]

According to research, symptoms may appear during a student's education and training.[6]

Studies indicate 70% of musculoskeletal disorders in dentists are due to LBP, primarily mild to moderate, with only 9.5% severe. Most dentists (57%) see between one and three patients daily.[7]

Stress from repetitive examinations, treatments and with insufficient rest, causing lower the QOL for health practitioners, impacting their overall well-being.[8]

Need Of The Study

- To assess the quality of life among dentists

Objectives Of The Study

- A study to assess prevalence of low back pain among dentists
- To assess disability caused by low back pain among dentists
- To assess quality of life among dentists with low back pain.

Methodology

Source Of Data: Dentists in and around South Bengaluru.

Inclusion Criteria:

- Volunteers willing to participate and sign the written consent

form.

- Dentists with 10 years of experience
- Dentists working for long hours a day or week

Exclusion Criteria:

- Subjects with any neurological disorders
- Subjects on medications
- Subjects undergoing treatment
- Subjects who have been experiencing pain for more than 3 months.
- Subjects undergoing any physical therapy.

Materials Required:

- oswestry low back pain disability questionnaires
- whoqol bref questionnaires

Procedure:

- Participants who met the inclusion criteria were enrolled in the study after providing written consent for the procedures.
- The Oswestry Disability Index, a 10-question tool (gold standard) for assessing functional disability in individuals with LBP, was used. Participants self-completed the questionnaire or were interviewed for score collection.

Interpretation of the scores are as follows: 0-4 = NO DISABILITY

5-14 = Mild Disability

15-24 = Moderate Disability

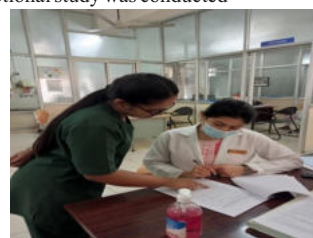
25-34 = Severe Disability

35-40 = Disabled

- The World Health Organisation Quality of Life BREF (WHOQOL-BREF) questionnaire assessed the impact of LBP on subject's daily lives, evaluating aspects like health and overall QOL across four domains.

Domain 1- Physical health Domain 2- Psychological Domain 3- Social relationship Domain 4- Environment

- Following this the demographic data was obtained and recorded. A cross sectional study was conducted



Subject Signing The Consent Form



Working Posture Of Dentists

RESULT ANALYSIS

a) Descriptive of the data

i. Qualitative data

Data from 40 participants showed a gender distribution of 55% male and 45% female dentists. The Oswestry Low Back Disability Questionnaire assessed disability levels due to LBP, with 60% reporting no disability, 38% mild disability, and only 2.5% experiencing moderate disability.

ii. Quantitative data

Subject's ages ranged from 35 to 55 years, averaging 40.48 years (SD = 5.62) with a median of 39.5 years (IQR: 36 to 42.75). Dentists had 10 to 30 years of experience, averaging 15.4 years (SD = 5.46) with a median of 14 years (IQR: 11.75 to 17.25). Oswestry Low Back Disability Questionnaire (LBDQ) scores ranged from 0 to 16, averaging 3.22 (SD = 3.99) with a median of 1.5 (IQR: 0 to 5). Quality of life was assessed using WHOQOL-BREF, with domain scores ranging from 56 to 100. Average scores were 81.62 for Domain 1, 78.55 for Domain 2, 81.3 for Domain 3, and 76.42 for Domain 4. Corresponding medians (IQR) were 84.5 (75 to 88) for Domain 1, 81 (69 to 88) for Domain 2, 78 (75 to 94) for Domain 3, and 75 (69 to 85) for Domain 4.

b) Inference

iii. Association of Low back pain (OSWESTRY LBDQ SCORE LEVELS) with QOL

Var	Levels	N	Range	Mean. S D	Median IQR.	Statistic Value	P Value
WHOQOL.. BREF.SC	MILD/MODERATE	16	56,94	77.94±11.25	81(69-88)	-1.8211	0.076 (T)
ORE.DOMA IN.1.	NO	24	63,100	84.08±9.91	88(81-88)	-1.8211	0.076 (T)
WHOQOL.. BREF.SC	MILD/MODERATE	16	56,100	76.31±13	81(67.5-88)	-1.0330	0.308 (T)
ORE.DOMA IN.2.	NO	24	56,94	80.04±9.82	81(75-88)	-1.0330	0.308 (T)
WHOQOL.. BREF.SC	MILD/MODERATE	16	44,100	75.94±18.1	75(69-94)	-1.7577	0.092 (T)
ORE.DOMA IN.3.	NO	24	69,100	84.88±11.37	81(75-100)	-1.7577	0.092 (T)
WHOQOL.. BREF.SC	MILD/MODERATE	16	56,100	75.56±13.63	75(67.5-88)	-0.3716	0.712 (T)
ORE.DOMA IN.4.	NO	24	69,100	84.88±11.37	81(75-100)	-1.7577	0.092 (T)

The table indicates relationship between LBP severity, measured by Oswestry LBDQ scores (MILD/MODERATE and NO), QOL scores across Domain 1, 2, 3, and 4 from 40 participants data. Descriptive statistics for each domain's QOL scores are provided for both MILD/MODERATE group (N = 16) and NO group (N = 24).

The results indicated that there were no statistically significant differences in QOL scores between dentists experiencing mild/moderate LBP and those with no LBP in all four domains.

In the Physical Health domain, the MILD/MODERATE group had a mean QOL score of 77.94, compared to 84.08 for the NO group. However, this difference was not statistically significant ($p = 0.076$), no significant differences found in other domains. Thus suggesting that LBP severity may not substantial impact dentists' QOL in specific

domains based on this sample. Although no differences were observed, it's noteworthy that sample means for all QOL domains were higher among individuals without LBP. The limited sample size may have contributed to the lack of statistical significance, indicating the need for further research with a larger sample to draw more robust conclusions.

C) Correlation Between Low Back Pain (oswestry Lbdq Score) With Whoqol.bref.score.domain.1.

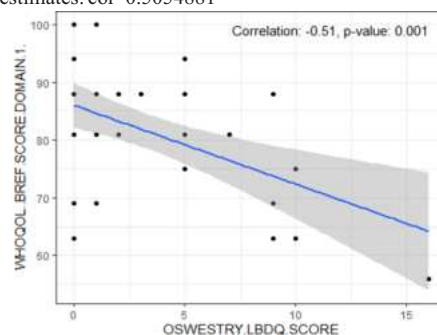
Pearson's product-moment correlation

data: data\$ oswestry .lbdq. score and data\$ whoqol. .bref.score.domain.1.

$t = -3.6114$, $df = 38$, $p\text{-value} = 0.0008775$

alternative hypothesis: true correlation is not equal to 0 95 percent confidence interval: -0.7058511 -0.2302321

sample estimates: cor -0.5054881



This study examined how participants' Oswestry LBDQ Score, measuring LBP-related disability, relates to their QOL in Domain 1, focusing on physical health. Correlation analysis showed a significant negative correlation ($r = -0.505$, $p < 0.001$), indicating that as LBP disability increases, QOL Domain 1 scores tend to decrease, indicating lower physical health-related QOL.

DISCUSSION

The present cross-sectional study investigated the prevalence of LBP among dentists in south Bengaluru and its relationship with QOL and disability.

Evidences from various study have demonstrated that dentists are prone to WRMSD especially LBP.

Study included 40 participants aged 35 to 55, an average age of 40.48, with 55% male and 45% female dentists. Utilising the OSWESTRY LOW BACK DISABILITY QUESTIONNAIRE (LBDQ) and WHOQOL BREF Questionnaire to evaluate LBP and QOL respectively.

The study found no significant differences in QOL scores between dentists with mild/moderate LBP and those without LBP across all four domains. Physical demands of dentistry, the static seated position and repetitive bending can strain the lower back, especially during concentrated dental procedures.

However, these differences were statistically insignificant, likely influenced by dentists adopting ergonomic practices such as using adjustable stools with lumbar support and rotation, sitting with feet flat on the floor and thighs parallel, using a footrest, ensuring proper lighting and mirror positioning, taking regular breaks from static positions every two to three hours, and engaging in frequent exercise.[7]

A negative correlation was observed between LBDQ scores and QOL in the physical health domain(1), indicating that greater LBP-related disability correlates with lower physical health-related QOL.

These findings suggest that, despite no significant differences in statistical tests, individuals without LBP generally had higher QOL domain scores. The study indicates that while LBP severity may not greatly affect dentists' QOL in specific domains, more extensive research with a larger sample size is required for firmer conclusions.

Limitations And Recommendations

A) study can be conducted with larger sample size.

B) further study can be conducted using various ergonomic tools like

branson posture assessment instrument(bpai) ,novel ergonomic postural assessment method (nepra), rapid upper limb assessment (rula) to assess the posture, risk factors of wrmsd among dentists for a detailed analysis.

CONCLUSION

- a) The cross sectional study found no statistically significant difference in QOL across all four domains among dentists with mild to moderate LBP.QOL Domain 1 (Physical component) was inversely proportional to LBP among dentists.
- b) The study observed that subjects are increasingly recognising the importance of lifestyle modifications, including use of ergonomically designed tools in their daily practice, resulting in mild or no disability and its association with QOL.
- c) The study concludes that the severity of LBP does not impact the QOL among dentists.
- d) More exploration in the area of ergonomics, LBP and QOL with large sample size can facilitate the association among various components.

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Conflict Of Interest

Archana P practices as an assistant professor at RV college of Physiotherapy, Sujana P is a freelancing physiotherapist, Pallavi Wajapey practices as associate professor at RV college of Physiotherapy. The above authors declare no conflict of interest.

List Of Abbreviations

- 1.WMSD: Work related musculoskeletal disorders
- 2.MSD: Musculoskeletal disorders
- 3.QOL: Quality of life
- 4.WHO: World health organization
- 5.LBP: Low back pain
- 6.LBDQ: Low back disability question

REFERENCES

1. Musculoskeletal disorders among dental practitioners- Does it affect practice.Department of public health dentistry, Narayana dental college and hospital Chinthareddypalem, Nellore AP India.
2. Musculoskeletal disorders and working posture among dental and oral health students. Melbourne dental school, university of Melbourne, Australia.
3. Mechanism leading to musculoskeletal disorders in dentistry. Valanchi B, K. Valanchi 2014.
4. Work related musculoskeletal disorders in dentists and orthodontists – A review of literature. Discipline of orthodontics, school of dentistry, University of Queensland Brisbane Australia.
5. Prevalence and associated factors of back pain among dental personnel in North Eastern State of Malaysia. IJCRIMPH vol3 No.7(2011)
6. Dental ergonomics to compact musculoskeletal disorders- A review. Department of public health dentistry KLE VK Instruction of Dental Science Belgaum , India.
7. Prevalence of and risk factors for Low back pain among Dentists- Riziq Alla Gaowgzeh, Mohamed Farsal Journalist of Physical Therapy Science 2015
8. Evaluation of quality of life among dental professionals by us WHOQOL-BREF instrument in Eastern province of Saudi Arabia.