

Research Article

The relationship between sense of coherence and oral health-related quality of life among medical and dental students in India: A cross-sectional study

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ABSTRACT

Objectives: To assess the sense of coherence (SOC) and oral health-related quality of life (OHRQoL) and evaluate the relationship between the two parameters among medical and dental students. **Materials and Methods:** This cross-sectional online survey was conducted among 210 medical and dental students in the district of Kottayam in Kerala, India. A stratified random sampling technique based on the year of study was employed. The sample size was calculated based on a pilot study conducted among 20 medical and 20 dental students. Mann-Whitney U-test, Kruskal-Wallis test, and Spearman's correlation test were used for statistical analysis. **Results:** The SOC and OHRQoL were higher among dental students than medical students. Those exposed to clinical postings presented with a higher SOC than the preclinical students. Furthermore, SOC was negatively correlated with the oral health impact among the clinical category of students ($P < 0.05$). **Conclusion:** Health is dependent on the individual and other physical, biological, and psychosocial factors. The concept of sense of coherence (SOC) is a psychosocial determinant of oral health in adults. A strong association between SOC and oral health-related quality of life has been established. In this study, OHRQoL was associated with the SOC among medical and dental students. Clinical category of students expressed a high SOC and better OHRQoL. Although the clinical category of students asserted a better quality of life, their stress level needs to be minimized. Health promotion and prevention of psychosocial symptoms should be included in the medical and dental curriculum.

Keywords: Medical students, Oral health-related quality of life, Psychosocial determinants of health, Salutogenesis, Sense of coherence

INTRODUCTION

The World Health Organization has defined “health” as “a state of complete physical, mental, and social wellbeing, and not merely the absence of disease or infirmity.”^[1] Reddy *et al.*, in their study among Indian middle-aged adults stated that health measurement should not be restricted to the use of exclusively clinical normative indicators.^[2] Health is dependent on the individual and other physical, biological, and psychosocial factors. The salutogenic theory is a conceptual model that focuses on psychosocial dimensions and its core construct is called sense of coherence (SOC). Health promotion and salutogenesis share a common vision for the well-being of the individual. Both theories recognize the ability to manage several positive or negative factors as good for the health of the individual health, in an everyday context.^[3]

The salutogenic theory, proposed by a medical sociologist called Aaron Antonovsky, explains the relationship between health and stress.^[4] Furthermore, SOC refers to the ability to comprehend

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the whole situation and the capacity to use the resources available. This capacity includes a combination of the individual's ability to assess and understand the situation, find a meaning to move in a health-promoting direction, also having the capacity to do so that is, comprehensibility, meaningfulness, and the manageability, using Antonovsky's terms.^[5]

The lives of medical and dental students have been subjected to different kinds of stress such as academic pressure, fear of failing in examinations, assignments, and criticisms by supervisors in front of the patient, especially fear of infectious disease transmission such as hepatitis B and human immunodeficiency virus.^[6,7] Dentistry was ranked as an extraordinarily stressful profession by both the student and after the dental education according to a systemic review by Elyasi *et al.*, which assessed the relationship between SOC and oral health behaviors.^[8] Some studies have linked stress with the academic year, gender, and living territory. Other studies have reported that stress among 1st and 2nd-year dental students was mainly due to academic performance, whereas clinical skills and interpersonal relationships were the main causes of stress among the preclinical students.^[6] A strong association between SOC and the incidence of chronic diseases as well as the quality of life has been reported in several studies. In the field of oral health, the incidence of chronic oral diseases such as dental caries and periodontitis is not only related to biological factors, but also oral health behaviors.^[9] The concept of SOC is considered a psychosocial determinant of oral health behaviors in adults; thus, individuals with a stronger SOC are more likely to attend regular dental check-ups, clean their teeth more often, and have healthier dietary habits compared to those with lower levels of SOC.^[10] The aim of this study was to evaluate the relationship between SOC and oral health-related quality of life (OHRQoL) among medical and dental students in the Kottayam district of Kerala, India.

MATERIALS AND METHODS

Ethical clearance for the study was obtained from the Ethical Committee of the Institution (IEC/M/22/2021/DCK). The study was conducted based on the guidelines of the Declaration of Helsinki. A descriptive cross-sectional online survey was conducted among medical and dental students in the Kottayam district from March 2021 to May 2021. The Government Medical College and Government Dental College are the only two tertiary health-care centers in this district. Before the commencement of the study, informed consent from the participants was obtained. Those who provided erroneously filled or incomplete questionnaires were excluded from the study.

A stratified random sampling technique based on the year of study was employed to ensure maximum participation. The sample size was calculated from the results of a pilot

study conducted among 20 (medical and dental students) in the district. The software "n MASTER" was used to calculate the sample size in this study. The total sample size was estimated as 206 and was rounded off to 210. Data from the pilot study were excluded from the results. A structured questionnaire in the English language was used to collect the sociodemographic data such as age, gender, and year of study. The SOC Scale^[9] and Oral Health Impact Profile-14 (OHIP-14)^[10] were used to measure the SOC and OHRQoL, respectively. The OHRQoL was considered as the dependent variable, whereas the SOC, year of study, and type of study course were used as the independent variables. The data were entered into Microsoft Excel files and analyzed using IBM Statistical Package for the Social Sciences, version 25.0 (SPSS Inc., Chicago, Illinois, USA). The Mann-Whitney U-test was used to compare the SOC among the dental and medical students and the same test was used to assess the relationship between the course and the different domains in the OHIP-14. The association between SOC and the domains of the OHRQoL between the different student categories (preclinical, clinical, and interns) was assessed using the Kruskal-Wallis test. Spearman's correlation test was used to determine the association between the SOC and the OHRQoL. $P < 0.05$ was considered significant.

RESULTS

This study included 210 subjects. About 65.3% of them were BDS professional degree students and 34.7% were MBBS professional degree students. Based on the year of study, the participants were classified into three categories: Interns, clinical, and preclinical students. In terms of gender, females made up 73.50% of the study participants, while males made up 26.6%. Among the dental students, female subjects (72.6%) surpassed male subjects (45%) by a substantial margin. The dental students presented with a better SOC (53 ± 7) than the medical students (50 ± 9) [Table 1]. No significant difference in SOC was observed among the various student categories [Table 2]. Among the seven OHIP-14 domains, significant differences in functional limitation and pain were observed between the dental and medical students ($P < 0.05$ [Table 3]). Likewise, significant differences in functional limitation ($P < 0.05$), physical disability ($P < 0.05$), and social disability ($P < 0.05$) were observed among the various student categories [Table 4]. A statistically significant negative correlation was observed between SOC and the oral health impact of OHIP-14 among the clinical students [Table 5].

DISCUSSION

Stress is a physical/psychological phenomenon that arises from a person's self-awareness of provoking factors after interacting with their surroundings. It has been observed

in a variety of settings, including the social, academic, and work settings; moreover, excessive stress is known to be detrimental to health.^[11] Stress and anxiety can lead to adverse events that should never be tolerated in the medical profession. According to Antonovsky, SOC is associated with the resources and dispositional orientation of an individual; it enables the individual to manage stress by reflecting on the external and internal resources and resolving the issues in a health-promoting manner.^[4] Individuals with a strong SOC tend to choose a strategy that is most suitable for the particular stressors they are confronted with.^[4] In the present study, the proportion of females enrolled in the BDS professional degree course was higher than that of males [Figure 1]. The majority of studies point toward the feminization of dentistry, which is a sociological concept that explains a shift in gender roles with the incorporation of women in a field that was once dominated by males.^[12-14] The working lives of female dentists are more likely to be affected by the demands of child-rearing. Dental professionals face lesser risk than medical professionals, because night shifts and life-threatening situations are infrequent in dentistry. Females will benefit from this in terms of balancing the home demands. According to a study conducted by Kfourri *et al.*, in Brazil, men are more likely to select dentistry as a good opportunity to earn money, whereas women are more likely to choose dentistry based on their interpersonal relationships and the flexibility of practicing the profession.^[14]

Healthcare professionals are subjected to a considerable amount of stress. In medical science, the dental profession is acknowledged as a demanding profession and the course requires fine motor skills to offer quality dental care to patients. Fine motor skills involve hand actions that require precisely coordinated movements to ensure maximum safety for the patients; in addition, they are required to create images of the teeth from radiographs, create and manipulate

casts and fillings, work in saliva filled fields, and use various instruments under direct and indirect vision.

Table 1: Association between sense of coherence and course.

Course	SOCTOT (Mean±SD)	P-value*
BDS	53±7	0.006*
MBBS	50±9	

*Mann-Whitney U test. SOCTOT: Sense of coherence total scores, SD: Standard deviation

Table 2: Sense of coherence among the various student categories.

Student category	SOCTOT (Mean±SD)	P-value
Interns	53±8.1	0.342*
Clinical	52±8.5	
Preclinical	51±7.7	

*Kruskal-Wallis test. SOCTOT: Sense of coherence total scores, SD: Standard deviation

Table 3: Association between the professional degree courses and the domains of OHIP-14.

Domains of OHIP-14	Course	Mean of OHIP-14 scores±SD	P-value*
Functional limitation	BDS	0.88±1.4	0.028*
	MBBS	1±1.3	
Pain	BDS	2±1.6	0.049*
	MBBS	2.5±1.6	
Psychological discomfort	BDS	2.6±1.8	0.897
	MBBS	2.6±2	
Physical disability	BDS	1.8±1.6	0.259
	MBBS	2±1.7	
Psychological disability	BDS	1.9±1.7	0.131
	MBBS	2.1±1.8	
Social	BDS	1.1±1.3	0.117
	MBBS	1.5±1.7	
Handicap	BDS	0.77±1.23	0.330
	MBBS	1.06±1.8	

*Mann-Whitney U-test. OHIP-14: Oral health impact profile-14, SD: Standard deviation

Table 4: Relationship between students' category and the domains of OHIP-14.

Domains	Students category	Mean of OHIP-14 scores±SD	P-value*
Functional limitation	Interns	0.77±1.7	0.003*
	Clinical	0.83±1.4	
	Pre-clinical	1.18±1.3	
Pain	Interns	1.41±1.2	0.071
	Clinical	2.4±1.7	
	Pre-clinical	2.13±1.6	
Psychologic discomfort	Interns	2.4±1.8	0.851
	Clinical	2.7±1.9	
	Pre-clinical	2.6±1.7	
Physical disability	Interns	1.3±1.4	0.032*
	Clinical	1.9±1.8	
	Pre-clinical	2.1±1.42	
Psychological disability	Interns	1.12±1.5	0.067
	Clinical	2.01±1.936	
	Pre-clinical	2.00±1.542	
Social disability	Interns	0.65±1.057	0.034*
	Clinical	1.19±1.644	
	Pre-clinical	1.33±1.318	
Handicap	Interns	0.65±1.412	0.425
	Clinical	0.94±1.706	
	Pre-clinical	0.81±1.174	

*Kruskal-Wallis test. OHIP-14: Oral health impact profile-14, SD: Standard deviation

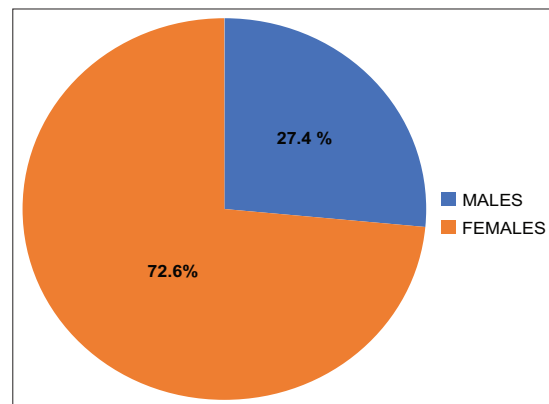
Table 5: Correlation between sense of coherence and OHIP-14.

Student category	Correlation coefficient	P-value
Preclinical	0.123	0.123
Clinical	-0.178	0.036*
Interns	0.473	0.055

OHIP-14: Oral health impact profile-14, *Spearman's correlation

In dental schools, simulations are used to enable the preclinical students to practice the various procedures used for the treatment of patients. In the present study, dental students endured more stress than medical students [Table 1], and the students who were exposed to clinical postings experienced more stress than the preclinical students [Table 2]. These findings are similar to that reported in another study conducted among medical and dental undergraduates in Pakistan.^[6] Burnout and excessive levels of stress were linked to their year of study, which could be attributed to the transition from preclinical to clinical training. This finding is in accordance with a study conducted by Babar *et al.*, in 2015 among Malaysian dental students.^[15] According to the study by El-Masry *et al.*, the clinical phase of medical education is a significant area for improvement to improve the transition between preclinical and clinical periods.^[16] In the present study, concerns about their employment prospects after graduation were rated as distressing among the dental interns. In general, medical professionals are at elevated risk for various psychological health problems, such as alcoholism, marital strife, or suicide, when compared to other professionals. Healthcare workers, including dentists, are ranked 11th on the Center for Disease Control and Prevention's list of the top 30 jobs with the highest risk of suicide.^[17-19] OHRQoL is a multi-dimensional construct, which incorporates a subjective appraisal of an individual's oral health, functional wellbeing, and social wellbeing. In the present study, dental students demonstrated a greater quality of life in terms of oral health than the medical students. These findings are contrary to those of another study conducted in India by Shilpa *et al.* in 2016, wherein the oral health of dental students was considerably affected.^[20] However, a recent study conducted by Manapoti *et al.*, reported that professional stress has a low impact on oral health among medical students in India.^[21]

According to the findings of a Croatian study,^[22] the oral health of most students did not have any significant impact on their OHRQoL. Moreover, psychological discomfort and physical pain were the most responsive among the OHIP-14 subscales in the study population. In the current study, the domains of functional limitation and pain showed statistically significant variations among the study subjects. The OHRQoL, in terms of functional limitation, physical disability, and social disability, demonstrated statistically

**Figure 1:** Percentage of Males and Females in BDS professional degree course.

significant differences among the various student categories in this study [Table 4]. In the present study, a statistically significant negative correlation was established between the SOC and OHIP-14 of the clinical students. A high level of SOC was substantially connected with improved oral health and quality of life.

The clinical students were subjected to a high level of stress, which resulted in a strong SOC that helped them cope with stressful conditions and adhere to improved oral healthcare practices. These findings are comparable to those of a previous study comprising Indian adolescents, in which the SOC was found to be substantially related to oral hygiene and periodontal health.^[21] This research has some limitations. Only academics-related psychosocial factors were examined. This study could only be completed online due to the COVID-19 pandemic at the time. Despite the fact that the clinical and preclinical age groups of students may differ globally, this study can be generalized to all medical and dental students due to the tiresome nature of the medical profession and the dexterity required to practice dentistry. Longitudinal research including a cohort of students over the different academic years can help to better understand the challenges that they actually experience.

CONCLUSION

The oral health parameters evaluated among 18–25-year-old medical and dental students in the Kottayam district in Kerala were found to be influenced by the SOC. Stress levels among clinical students were extremely high. They consequently expressed a high SOC and better OHRQoL. Although the clinical students claimed to have a better quality of life, their stress level needs to be minimized through multidisciplinary efforts. Health promotion and prevention of psychosocial symptoms should be included in the medical and dental

curricula and their importance should be emphasized during the training of both professionals.

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Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent.

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Conflicts of interest

There are no conflicts of interest.

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