

Knowledge attitude and perception regarding oral health in Medical and Nursing students-A Questionnaire Based Survey

Krishna Tungariya¹, K. A. Kamala², S. Sankethguddad³, Ashwinirani SR⁴, Madhura Mahajan⁵

¹Intern, School of Dental Sciences, Krishna VishwaVidyapeeth Deemed to be University, Karad, Pin code -415110, District-Satara, Maharashtra, India.

²Associate Professor, Department of Oral Medicine & Radiology, School of Dental Sciences, Krishna Vishwa Vidyapeeth Deemed to be University, Karad, Pin code - 415110, District- Satara, Maharashtra, India.

Email ID: kamsweetsmile@gmail.com

³Associate Professor, Department of Periodontology, HKDET'S Dental College, Hospital and Reaserch Institute, Huminadad-585330, Karnataka, India.

⁴Associate Professor, Department of Oral Medicine and Radiology. School of Dental Sciences, KVVDU, Karad, Pin code - 415110, District- Satara, Maharashtra, India.

⁵Assistant Professor, Department of Oral Medicine and Radiology. School of Dental Sciences, Krishna VishwaVidyapeeth Deemed to be University, Karad, Pin code -415110, District- Satara, Maharashtra, India.

*Corresponding Author:

K. A. Kamala

Email ID: kamsweetsmile@gmail.com

Cite this paper as: Krishna Tungariya, K. A. Kamala, S. Sankethguddad, Ashwinirani SR, Madhura Mahajan, (2025) Knowledge attitude and perception regarding oral health in Medical and Nursing students-A Questionnaire Based Survey. *Journal of Neonatal Surgery*, 14 (19s), 53-67.

ABSTRACT

Background: Oral health is an essential yet often overlooked component of overall health. Despite growing evidence linking poor oral health to systemic conditions such as cardiovascular disease, diabetes, and cognitive decline, awareness and integration of oral health into general healthcare remain limited. Medical and nursing students, as future healthcare providers, play a critical role in addressing this gap through interprofessional collaboration and patient education.

Aim: To assess the knowledge, attitude, and perception regarding oral health and its systemic implications among medical and nursing students.

Materials and Methods: A cross-sectional questionnaire-based survey was conducted among 80 medical and nursing students aged 18–30 years. The study was approved by the Krishna Vishwa Vidyapeeth Institutional Clinical Research Ethics Committee (Protocol No. 082/2024-2025). A 23-item structured questionnaire was distributed via Google Forms, covering four key domains: general information, oral health status, awareness, and perceived oral-systemic health connections. Data were analyzed using SPSS version 16.0 with descriptive statistics and Chi-square tests ($p < 0.05$ considered significant).

Results: 66.67% of participants visited the dentist only when problems occurred, while 93.33% agreed that maintaining good oral hygiene is vital. 73.08% had not been informed by a healthcare provider about oral-systemic health links. Attitudinal differences were observed across gender, occupation, and geographic background. Nursing students demonstrated slightly lower awareness levels compared to medical students.

Conclusion: Although students acknowledge the importance of oral hygiene, there exists a significant gap in awareness of its systemic implications. Integrating oral health education into medical and nursing curricula is essential to promote comprehensive, patient-centered care.

Keywords: oral health, systemic health, medical and nursing students. health awareness, questionnaire survey.

1. INTRODUCTION

The mouth is a window to our overall health, and oral health is a vital component of our overall wellbeing. For too long, oral health has been segregated from the rest of healthcare, with many viewing it as a separate entity rather than an integral part of our overall health. However, the evidence is clear: oral health has far-reaching consequences that extend beyond the mouth and can have a significant impact on our overall health and wellbeing. From the intimate connection between gum disease and heart disease, to the links between tooth loss and cognitive decline, the relationship between oral health and overall health is complex and multifaceted. Moreover, oral health disparities affect vulnerable populations, exacerbating existing health inequities. This project, "The Far-Reaching Consequences of Oral Health on Overall Health", aims to illuminate the critical connections between oral health and overall health, highlighting the need for a more integrated approach to healthcare that prioritizes the mouth-body connection.

For decades, oral health was viewed as a standalone aspect of our overall health, confined to the realm of dentistry. However, ground-breaking research has shattered this isolation, revealing a profound interconnection between our mouth and body. The state of our oral health has far-reaching consequences, influencing our overall well-being, quality of life, and even life expectancy.

Poor oral health has been linked to an increased risk of chronic diseases, such as heart disease, diabetes, and respiratory infections. Conversely, maintaining good oral health can boost our immune system, enhance cognitive function, and even reduce the risk of premature birth. The intricate relationships between oral health and overall health demand attention, emphasizing the need for holistic approaches to healthcare.

Oral health has long been regarded as a peripheral aspect of healthcare, with many viewing it as solely related to teeth and gums. However, the mouth is a gateway to the body, and oral health has far-reaching consequences that extend beyond the mouth.

Recent research has revealed striking connections between oral health and various systemic conditions, including:

Increased risk of heart disease and stroke

Complications in diabetes management

Links to Alzheimer's disease and cognitive decline

Impacts on mental health and wellbeing

Effects on nutritional intake and digestive health

Influence on immune system function and inflammation

Despite these findings, oral health remains disconnected from overall healthcare, leading to:

Inadequate oral health education and awareness

Limited integration of oral health into primary care

Insufficient research funding and resource allocation

Disparities in access to oral healthcare, particularly for vulnerable populations by exploring the far-reaching consequences of oral health, this project aims to address these gaps and highlight the need for a more comprehensive approach to healthcare that recognizes the integral role of oral health in overall wellbeing.

Oral health is intricately linked to general health, with imbalances in oral health contributing to systemic conditions and diminished quality of life. The individual perception of oral health's impact on life quality has grown in importance, as it influences not only health outcomes but also self-care behaviours.

Understanding the consequences of oral health on overall health requires exploring the interplay between physical conditions (such as pain and dysfunction), emotional well-being, and social interactions. This topic highlights the broader implications of oral health, underscoring its role in shaping overall health outcomes and quality of life.

2. MATERIALS AND METHODS

The study protocol for this research was approved by the Krishna Vishwa Vidyapeeth Institutional Clinical Research Ethics Committee on 03/08/2024, with protocol number 082/2024-2025. The research group consists of 80 participants, including general population.

An online questionnaire was created using Google Forms, consisting of 23 questions. The questionnaire was focused on knowledge and awareness regarding the consequences of oral health on overall health.

The participants were provided informed consent before completing an online questionnaire via Google Forms. Participants will be recruited from general population of age between 18 to 70 years. The questionnaire consisted of 23 questions designed

to assess the knowledge regarding the consequences of oral health on overall health, to assess awareness regarding consequences of oral health on overall health. Questions were structured into sections covering General Information, Oral Health Status, General Health Status, Perceived relationship between oral & overall health.

A total of 23 open -ended and closed -ended questions were included about oral health status of patients, their general health status, and relationship between oral and overall health.

Statistical Analysis

The statistical analysis was conducted using SPSS version 16.0. Descriptive statistical methods (mean, standard deviation, frequency) were used, and the Chi-Square test was applied for the comparison of qualitative data. Significance was assessed at a p-value of < 0.05 .

3. RESULT

The mouth is a window to our overall health, and oral health is a vital component of our overall wellbeing. For too long, oral health has been segregated from the rest of healthcare, with many viewing it as a separate entity rather than an integral part of our overall health. However, the evidence is clear: oral health has far-reaching consequences that extend beyond the mouth and can have a significant impact on our overall health and wellbeing. From the intimate connection between gum disease and heart disease, to the links between tooth loss and cognitive decline, the relationship between oral health and overall health is complex and multifaceted. Moreover, oral health disparities affect vulnerable populations, exacerbating existing health inequities. This project, "The Far-Reaching Consequences of Oral Health on Overall Health", aims to illuminate the critical connections between oral health and overall health, highlighting the need for a more integrated approach to healthcare that prioritizes the mouth-body connection.

The questionnaire was structured around two key variables: knowledge and awareness. The knowledge section comprised a total of 17 questions (Questions 1 to 17), while the awareness section included another 6 questions (Questions 18 to 23).

To analyse the results, four demographic variables were selected: age, gender, occupation and geographic location. These variables were utilized to assess differences and correlations in participants' responses, providing a comprehensive understanding of their perspectives.

While assessing the knowledge variability related to the age among general population, it was found that 66.67% of people aged 11 to 20 years visit to the Dentist only when having problems. Additionally, when evaluating their awareness, it was found that 93.33% of people aged 11 to 20 years believe that it is very important to maintain good oral hygiene. (Table-1)

While assessing the knowledge variability related to the gender among general population, it was found that 38.9% of females and 42.5% agreed to those dental problems affect their impact on self-confidence. Additionally, when evaluating their awareness, it was found that 22.22% of females and 26.9% of males agreed that they face barriers in accessing dental care. (Table-2)

While assessing the knowledge variability related to the occupation among dental practitioners 36.6% and among general population 82.05% responded that they brush their teeth once a day. Additionally, when evaluating their awareness, it was found that 73.08% of general population are not informed by a health care provider about the link between oral health and systemic health. (Table-3)

While assessing the knowledge variability related to the geographic location among general population, it was found that 14.58% (Urban) and 19% (Sub urban) of people are diagnosed with gum disease. Additionally, when evaluating their awareness, it was found that 89.58% (Urban), 95.2% (Sub urban) and 81.8% (Rural) believe that improving oral health would positively impact on overall health. (Table-4)

TABLE 1- EVALUATION BY AGE

		11-20(%)	21-30(%)	31-40(%)	40 & above(%)	total(%)	chi square	P VALUE
1. How often do you brush your teeth?	Once a day	5(33.33%)	26(41.9%)	1(50%)	1(50%)	33(41.25%)	1.887	0.5961
	Twice a day	10(66.67%)	36(58.1%)	1(50%)	0(0%)	47(58.75%)		
2. How often do you floss	Daily	3(20%)	15(24.2%)	0(0%)	0(0%)	18(22.5%)	19.272	0.0230

your teeth?	Never	2(13.33%)	9(14.5%)	2(100%)	1(100%)	14(17.5%)		
	Occasionally	4(26.67%)	28(45.2%)	0(0%)	0(0%)	32(40%)		
	Weekly	6(40%)	10(16.1%)	0(0%)	0(0%)	16(20%)		
3. Do you use mouthwash?	No	4(26.67%)	21(33.9%)	2(100%)	1(100%)	28(35%)	6.065	0.4159
	Yes, occasionally	8(53.33%)	30(48.4%)	0(0%)	0(0%)	38(47.5%)		
	Yes, daily	3(20%)	11(17.7%)	0(0%)	0(0%)	14(17.5%)		
4. How often do you visit a dentist?	Every 6 months	2(13.33%)	18(29%)	0(0%)	0(0%)	20(25%)	3.792	0.9245
	Never	1(6.667%)	3(4.84%)	0(0%)	0(0%)	4(5%)		
	Once a year	2(13.33%)	7(11.3%)	0(0%)	0(0%)	9(11.25%)		
	Only when having problems	10(66.67%)	34(54.8%)	2(100%)	1(100%)	47(58.75%)		
5. Have you ever been diagnosed with gum disease?	No	15(100%)	51(82.3%)	2(100%)	1(100%)	69(86.25%)	3.703	0.2954
	Yes	0(0%)	11(17.7%)	0(0%)	0(0%)	11(13.75%)		
6. Do you experience any of the following symptoms?	Bad breath	1(6.667%)	4(6.45%)	0(0%)	0(0%)	5(6.25%)	10.551	0.5677
	Bleeding gums	0(0%)	9(14.5%)	1(50%)	0(0%)	10(12.5%)		
	Other	3(20%)	15(24.2%)	0(0%)	0(0%)	18(22.5%)		
	Sensitivity to hot or cold	8(53.33%)	20(32.3%)	1(50%)	0(0%)	29(36.25%)		
	Toothache	3(20%)	14(22.6%)	0(0%)	1(100%)	18(22.5%)		
7. Have dental problems affected your ability to eat comfortably?	No	8(53.33%)	22(35.5%)	1(50%)	0(0%)	31(38.75%)	2.362	0.5007
	Yes	7(46.67%)	40(64.5%)	1(50%)	1(100%)	49(61.25%)		
8. Do you have any of the following health	Diabetes	0(0%)	1(1.61%)	0(0%)	0(0%)	1(1.25%)	1.883	0.9996
	Gastrointestinal issues	0(0%)	2(3.23%)	0(0%)	0(0%)	2(2.5%)		

conditions?	Heart disease	0(0%)	2(3.23%)	0(0%)	0(0%)	2(2.5%)		
	None	15(100%)	56(90.3%)	2(100%)	1(100%)	74(92.5%)		
	Others	0(0%)	1(1.61%)	0(0%)	0(0%)	1(1.25%)		
9. How would you rate your overall health?	Excellent	2(13.33%)	12(19.4%)	0(0%)	0(0%)	14(17.5%)	8.297	0.2171
	Fair	2(13.33%)	8(12.9%)	1(50%)	1(100%)	12(15%)		
	Good	11(73.33%)	42(67.7%)	1(50%)	0(0%)	54(67.5%)		
10. Do you engage in regular physical activity?	Never	0(0%)	4(6.45%)	2(100%)	0(0%)	6(7.5%)	28.189	0.0009
	Occasionally	5(33.33%)	20(32.3%)	0(0%)	1(100%)	26(32.5%)		
	Yes, a few times a week	5(33.33%)	21(33.9%)	0(0%)	0(0%)	26(32.5%)		
	Yes, daily	5(33.33%)	17(27.4%)	0(0%)	0(0%)	22(27.5%)		
11. Have you ever felt embarrassed or self-conscious about your teeth or smile?	No	11(73.33%)	45(72.6%)	0(0%)	1(100%)	57(71.25%)	5.445	0.1419
	Yes	4(26.67%)	17(27.4%)	2(100%)	0(0%)	23(28.75%)		
12. Do you believe there is a connection between oral health and overall health?	No	0(0%)	5(8.06%)	0(0%)	0(0%)	5(6.25%)	2.013	0.9185
	Unsure	1(6.667%)	2(3.23%)	0(0%)	0(0%)	3(3.75%)		
	Yes	14(93.33%)	55(88.7%)	2(100%)	1(100%)	72(90%)		
13. Have you ever been informed by a healthcare provider about the link between oral health and systemic health?	No	4(26.67%)	17(27.4%)	2(100%)	1(100%)	24(30%)	7.276	0.0636
	Yes	11(73.33%)	45(72.6%)	0(0%)	0(0%)	56(70%)		

14. Do you think improving your oral health would positively impact your overall health?	No	0(0%)	2(3.23%)	0(0%)	0(0%)	2(2.5%)	18.70 5	0.0047
	Unsure	1(6.667%)	3(4.84%)	1(50%)	1(100%)	6(7.5%)		
	Yes	14(93.33%)	57(91.9%)	1(50%)	0(0%)	72(90%)		
15. Have you noticed any changes in your general health after addressing oral health issues?	No	3(20%)	11(17.7%)	0(0%)	0(0%)	14(17.5%)	4.983	0.5460
	Not applicable	5(33.33%)	9(14.5%)	0(0%)	0(0%)	14(17.5%)		
	Yes	7(46.67%)	42(67.7%)	2(100%)	1(100%)	52(65%)		

Chi-square test, $p \leq 0.05$

TABLE 2- EVALUATION BY GENDER

		FEMALE %	MALE %	TOTAL %	CHI SQUARE	P VALUE
1. How often do you brush your teeth?	Once a day	18(33.3%)	15(57.7%)	33(41.3%)	4.297	0.0382
	Twice a day	36(66.7%)	11(42.3%)	47(58.8%)		
2. How often do you floss your teeth?	Daily	8(14.8%)	10(38.5%)	18(22.5%)	6.627	0.0848
	Never	9(16.7%)	5(19.2%)	14(17.5%)		
	Occasionally	24(44.4%)	8(30.8%)	32(40%)		
	Weekly	13(24.1%)	3(11.5%)	16(20%)		
3. Do you use mouthwash?	No	19(35.2%)	9(34.6%)	28(35%)	5.223	0.0734
	Yes, occasionally	29(53.7%)	9(34.6%)	38(47.5%)		
	Yes, daily	6(11.1%)	8(30.8%)	14(17.5%)		
4. How often do you visit a dentist?	Every 6 months	15(27.8%)	5(19.2%)	20(25%)	1.252	0.7406
	Never	3(5.56%)	1(3.85%)	4(5%)		
	Once a year	5(9.26%)	4(15.4%)	9(11.3%)		
	Only when having problems	31(57.4%)	16(61.5%)	47(58.8%)		
5. Have you ever been diagnosed with gum disease?	No	49(90.74%)	20(76.9%)	69(86.3%)	2.825	0.0928
	Yes	5(9.259%)	6(23.1%)	11(13.8%)		
6. Do you experience any of the following symptoms?	Bad breath	0(0%)	5(19.2%)	5(6.25%)	17.738	0.0014
	Bleeding gums	4(7.41%)	6(23.1%)	10(12.5%)		
	Other	15(27.8%)	3(11.5%)	18(22.5%)		
	Sensitivity to hot or cold	23(42.6%)	6(23.1%)	29(36.3%)		

	toothache	12(22.2%)	6(23.1%)	18(22.5%)		
7. Have dental problems affected your ability to eat comfortably?	No	22(40.7%)	9(34.6%)	31(38.8%)	0.2774	0.5984
	Yes	32(59.3%)	17(65.4%)	49(61.3%)		
8. Do you have any of the following health conditions?	Diabetes	0(0%)	1(3.85%)	1(1.25%)	3.185	0.5274
	Gastrointestinal issues	1(1.85%)	1(3.85%)	2(2.5%)		
	Heart disease	1(1.85%)	1(3.85%)	2(2.5%)		
	None	51(94.4%)	23(88.5%)	74(92.5%)		
	Others	1(1.85%)	0(0%)	1(1.25%)		
9. Do you take any medications regularly?	No	51(94.4%)	23(88.5%)	74(92.5%)	0.9055	0.3413
	Yes	3(5.56%)	3(11.5%)	6(7.5%)		
10. How would you rate your overall health?	Excellent	7(13%)	7(26.9%)	14(17.5%)	2.465	0.2916
	Fair	9(16.7%)	3(11.5%)	12(15%)		
	Good	38(70.4%)	16(61.5%)	54(67.5%)		
11. Do you engage in regular physical activity?	Never	5(9.259%)	1(3.85%)	6(7.5%)	5.897	0.1167
	Occasionally	21(38.89%)	5(19.2%)	26(32.5%)		
	Yes, a few times a week	17(31.48%)	9(34.6%)	26(32.5%)		
	Yes, daily	11(20.37%)	11(42.3%)	22(27.5%)		
12. Do you smoke or use tobacco products?	No	51(94.44%)	23(88.5%)	74(92.5%)	0.9055	0.3413
	Yes	3(5.556%)	3(11.5%)	6(7.5%)		
13. Do you consume alcohol?	No	47(87.04%)	21(80.8%)	68(85%)	2.168	0.1409
	Yes	0(0%)	1(3.85%)	1(1.25%)		
14. Have you ever felt embarrassed or self-conscious about your teeth or smile?	No	41(75.93%)	16(61.5%)	57(71.3%)	1.773	0.1830
	Yes	13(24.07%)	10(38.5%)	23(28.8%)		
15. Do you feel anxious or worried about dental visits or procedures?	No	39(72.22%)	18(69.2%)	57(71.3%)	0.07667	0.7819
	Yes	15(27.78%)	8(30.8%)	23(28.8%)		
16. Do you believe there is a connection between oral health and overall health?	No	3(5.556%)	2(7.69%)	5(6.25%)	1.849	0.3968
	Unsure	1(1.852%)	2(7.69%)	3(3.75%)		
	Yes	50(92.59%)	22(84.6%)	72(90%)		
17. Have you ever been informed by a healthcare provider about the link between oral health and systemic health?	No	12(22.22%)	12(46.2%)	24(30%)	4.786	0.0287
	Yes	42(77.78%)	14(53.8%)	56(70%)		
18. Do you think improving	No	1(1.852%)	1(3.85%)	2(2.5%)	1.241	0.5377

your oral health would positively impact your overall health?	Unsure	3(5.556%)	3(11.5%)	6(7.5%)		
	Yes	50(92.59%)	22(84.6%)	72(90%)		
19. Have you noticed any changes in your general health after addressing oral health issues?	No	8(14.81%)	6(23.1%)	14(17.5%)	2.106	0.3488
	Not applicable	8(14.81%)	6(23.1%)	14(17.5%)		
	Yes	38(70.37%)	14(53.8%)	52(65%)		
20. How important do you think it is to maintain good oral hygiene?	Important	5(9.259%)	4(15.4%)	9(11.3%)	2.862	0.2391
	Not Important	0(0%)	1(3.85%)	1(1.25%)		
	Very Important	49(90.74%)	21(80.8%)	70(87.5%)		
21. Do you face any barriers in accessing dental care?	No	42(77.78%)	19(73.1%)	61(76.3%)	0.2142	0.6435
	Yes	12(22.22%)	7(26.9%)	19(23.8%)		

Chi-square test, $p \leq 0.05$

TABLE 3- EVALUATION BY OCCUPATION

		DENTAL PRACTITIONERS %	GENERAL POPULATION %	TOTAL %	CHI SQUARE	P VALUE
1. How often do you brush your teeth?	Once a day	26(63.4%)	7(17.95%)	33(41.3%)	17.049	0.0001
	Twice a day	15(36.6%)	32(82.05%)	47(58.8%)		
2. How often do you floss your teeth?	Daily	6(25%)	3 (21.43%)	18 (22.5%)	8.325	0.0398
	Never	2(8.33%)	10(71.43%)	14(17.5%)		
	Occasionally	11(45.85%)	7(50%)	32(40%)		
	Weekly	5(20.8%)	10(71.43%)	16(20%)		
3. Do you use mouthwash?	No	20(31.3%)	8(50%)	28(35%)	1.992	0.3693
	Yes, occasionally	32(50%)	6(37.5%)	38(47.5%)		
	Yes, daily	12(18.8%)	2(12.5%)	14(17.5%)		
4. How often do you visit a dentist?	Every 6 months	8(33.3%)	2(14.29%)	20(25%)	5.522	0.1373
	Never	2(8.33%)	2(14.29%)	4(5%)		
	Once a year	2(8.33%)	6(42.86%)	9(11.3%)		
	Only when having problems	12(50%)	9(64.29%)	47(58.8%)		

5. Have you ever been diagnosed with gum disease?	No	21(87.5%)	11(84.62%)	69(86.3%)	3.018	0.0824
	Yes	3(12.5%)	6(46.15%)	11(13.8%)		
6. Do you experience any of the following symptoms?	Bad breath	3(11.5%)	1(8.333%)	5(6.25%)	4.152	0.3859
	Bleeding gums	4(15.4%)	5(41.67%)	10(12.5%)		
	Other	8(30.8%)	8(66.67%)	18(22.5%)		
	Sensitivity to hot or cold	9(34.6%)	4(33.33%)	29(36.3%)		
	Toothache	2(7.69%)	5(41.67%)	18(22.5%)		
7. Have dental problems affected your ability to eat comfortably?	No	10(21.3%)	20(63.64%)	31(38.8%)	2.393	0.1219
	Yes	14(78.7%)	12(36.36%)	49(61.3%)		
8. Have dental problems affected your ability to speak clearly?	No	16(66.7%)	11(78.57%)	58(72.5%)	0.6093	0.4351
	Yes	8(33.3%)	3(21.43%)	22(27.5%)		
9. Have dental problems affected your impact on self-confidence?	No	10(45.5%)	11(78.57%)	46(57.5%)	3.860	0.0494
	Yes	12(54.5%)	3(21.43%)	34(42.5%)		
10. Do you have any of the following health conditions?	Diabetes	1(4.55%)	0(0%)	1(1.25%)	1.537	0.8200
	Gastrointestinal issues	1(4.55%)	1(7.143%)	2(2.5%)		
	Heart disease	1(4.55%)	1(7.143%)	2(2.5%)		
	None	18(81.8%)	13(92.86%)	74(92.5%)		
	Others	1(4.55%)	0(0%)	1(1.25%)		
11. Do you take any medications regularly?	No	12(92.3%)	12(85.71%)	74(92.5%)	0.8615	0.3533
	Yes	1(7.69%)	3(21.43%)	6(7.5%)		
12. How would you rate your overall health?	Excellent	1(9.09%)	9(64.29%)	14(17.5%)	14.086	0.0009
	Fair	0(0%)	10(71.43%)	12(15%)		

	Good	10(90.9%)	6(42.86%)	54(67.5%)		
13. Do you engage in regular physical activity?	Never	1(9.09%)	4(28.57%)	6(7.5%)	5.461	0.1410
	Occasionally	4(36.4%)	4(28.57%)	26(32.5%)		
	Yes, a few times a week	6(54.5%)	4(28.57%)	26(32.5%)		
	Yes, daily	0(0%)	4(28.57%)	22(27.5%)		
14. Do you smoke or use tobacco products?	No	11(100%)	14(100%)	74(100%)	2.174	0.1403
	Yes	0(0%)	3(0%)	6(0%)		
15. Do you consume alcohol?	No	13(100%)	13(92.86%)	68(85%)	NA	<0.0001
	Yes	0(0%)	0(7.143%)	1(1.25%)		
16. Have you ever felt embarrassed or self-conscious about your teeth or smile?	No	8(61.5%)	8(57.14%)	57(71.3%)	0.05395	0.8163
	Yes	5(38.5%)	6(42.86%)	23(28.8%)		
17. Do you feel anxious or worried about dental visits or procedures?	No	11(100%)	8(57.14%)	57(71.3%)	6.203	0.0128
	Ye	0(0%)	6(42.86%)	23(28.8%)		
18. Do you believe there is a connection between oral health and overall health?	No	0(0%)	4(28.57%)	5(6.25%)	3.823	0.1478
	Unsure	0(0%)	3(21.43%)	3(3.75%)		
	Yes	11(100%)	18(128.6%)	72(90%)		
19. Have you ever been informed by a healthcare provider about the link between oral health and systemic health?	No	3(9.26%)	19(73.08%)	24(30%)	6.728	0.0095
	Yes	8(90.7%)	7(26.92%)	56(70%)		

20. Do you think improving your oral health would positively impact your overall health?	No	0(0%)	1(7.143%)	2(2.5%)	1.778	0.4111
	Unsure	1(9.09%)	4(28.57%)	6(7.5%)		
	Yes	10(90.9%)	12(85.71%)	72(90%)		
21. Have you noticed any changes in your general health after addressing oral health issues?	No	4(18.2%)	3(21.43%)	14(17.5%)	4.143	0.1260
	Not applicable	3(13.6%)	9(64.29%)	14(17.5%)		
	Yes	15(68.2%)	10(71.43%)	52(65%)		
22. How important do you think it is to maintain good oral hygiene?	Important	3(13.6%)	4(28.57%)	9(11.3%)	1.330	0.5142
	Not Important	1(4.55%)	0(0%)	1(1.25%)		
	Very Important	18(81.8%)	13(92.86%)	70(87.5%)		
23. Do you face any barriers in accessing dental care?	No	17(70.8%)	8(57.14%)	61(76.3%)	0.7363	0.3908
	Yes	7(29.2%)	6(42.86%)	19(23.8%)		

Chi-square test, $p \leq 0.05$

TABLE 4- EVALUATION BY GEOGRAPHIC LOCATION

		URBAN%	SUB URBAN%	RURAL%	TOTAL%	Chi square	P value
1. How often do you brush your teeth?	Once a day	17(35.42%)	7(33.3%)	9(81.8%)	33(41.3%)	8.687	0.0130
	Twice a day	31(64.58%)	14(66.7%)	2(18.2%)	47(58.8%)		
2. How often do you floss your teeth?	Daily	10(20.83%)	6(28.6%)	2(18.2%)	18(22.5%)	11.638	0.0706
	Never	7(14.58%)	2(9.52%)	5(45.5%)	14(17.5%)		
	Occasionally	22(45.83%)	6(28.6%)	4(36.4%)	32(40%)		
	Weekly	9(18.75%)	7(33.3%)	0(0%)	16(20%)		
3. Do you use mouthwash?	No	17(35.42%)	6(28.6%)	5(45.5%)	28(35%)	2.911	0.5729
	Yes, occasionally	24(50%)	9(42.9%)	5(45.5%)	38(47.5%)		

	Yes, daily	7(14.58%)	6(28.6%)	1(9.09%)	14(17.5%)		
4. How often do you visit a dentist?	Every 6 months	13(27.08%)	7(33.3%)	0(0%)	20(25%)	8.503	0.2035
	Never	3(6.25%)	1(4.76%)	0(0%)	4(5%)		
	Once a year	4(8.333%)	4(19%)	1(9.09%)	9(11.3%)		
	Only when having problems	28(58.33%)	9(42.9%)	10(90.9%)	47(58.8%)		
5. Have you ever been diagnosed with gum disease?	No	41(85.42%)	17(81%)	11(100%)	69(86.3%)	2.279	0.3200
	Yes	7(14.58%)	4(19%)	0(0%)	11(13.8%)		
6. Do you experience any of the following symptoms?	Bad breath	1(2.083%)	4(19%)	0(0%)	5(6.25%)	13.055	0.1100
	Bleeding gums	8(16.67%)	2(9.52%)	0(0%)	10(12.5%)		
	Other	10(20.83%)	4(19%)	4(36.4%)	18(22.5%)		
	Sensitivity to hot or cold	20(41.67%)	6(28.6%)	3(27.3%)	29(36.3%)		
	Toothache	9(18.75%)	5(23.8%)	4(36.4%)	18(22.5%)		
7. Have dental problems affected your ability to eat comfortably?	No	18(37.5%)	7(33.3%)	6(54.5%)	31(38.8%)	1.448	0.4849
	Yes	30(62.5%)	14(66.7%)	5(45.5%)	49(61.3%)		
8. Have dental problems affected your ability to speak clearly?	No	33(68.75%)	17(81%)	8(72.7%)	58(72.5%)	1.091	0.5795
	Yes	15(31.25%)	4(19%)	3(27.3%)	22(27.5%)		
9. Have dental problems affected your impact on self-confidence?	No	28(58.33%)	10(47.6%)	8(72.7%)	46(57.5%)	1.896	0.3874
	Yes	20(41.67%)	11(52.4%)	3(27.3%)	34(42.5%)		
10. Do you have any of the following health conditions?	Diabetes	0(0%)	1(4.76%)	0(0%)	1(1.25%)	6.271	0.6169
	Gastrointestinal issues	2(4.167%)	0(0%)	0(0%)	2(2.5%)		
	Heart disease	2(4.167%)	0(0%)	0(0%)	2(2.5%)		
	None	43(89.58%)	20(95.2%)	11(100%)	74(92.5%)		

	Others	1(2.083%)	0(0%)	0(0%)	1(1.25%)		
11. Do you take any medications regularly?	No	45(93.75%)	19(90.5%)	10(90.9%)	74(92.5%)	0.2722	0.8727
	Yes	3(6.25%)	2(9.52%)	1(9.09%)	6(7.5%)		
12. How would you rate your overall health?	Excellent	10(20.83%)	2(9.52%)	2(18.2%)	14(17.5%)	3.161	0.5312
	Fair	9(18.75%)	2(9.52%)	1(9.09%)	12(15%)		
	Good	29(60.42%)	17(81%)	8(72.7%)	54(67.5%)		
13. Do you engage in regular physical activity?	Never	3(6.25%)	2(9.52%)	1(9.09%)	6(7.5%)	3.076	0.7992
	Occasionally	13(27.08%)	9(42.9%)	4(36.4%)	26(32.5%)		
	Yes, a few times a week	16(33.33%)	6(28.6%)	4(36.4%)	26(32.5%)		
	Yes, daily	16(33.33%)	4(19%)	2(18.2%)	22(27.5%)		
14. Do you smoke or use tobacco products?	No	44(91.67%)	19(90.5%)	11(100%)	74(92.5%)	1.064	0.5875
	Yes	4(8.333%)	2(9.52%)	0(0%)	6(7.5%)		
15. Do you consume alcohol?	No	38(79.17%)	19(90.5%)	11(100%)	68(85%)	0.7805	0.6769
	Yes	1(2.083%)	0(0%)	0(0%)	1(1.25%)		
16. Have you ever felt embarrassed or self-conscious about your teeth or smile?	No	33(68.75%)	14(66.7%)	10(90.9%)	57(71.3%)	2.437	0.2956
	Yes	15(31.255)	7(33.3%)	1(9.09%)	23(28.8%)		
17. Do you feel anxious or worried about dental visits or procedures?	No	33(68.75%)	14(66.7%)	10(90.9%)	57(71.3%)	2.437	0.2956
	Ye	15(31.25%)	7(33.3%)	1(9.09%)	23(28.8%)		
18. Do you believe there is a connection between oral health and overall health?	No	3(6.25%)	1(4.76%)	1(9.09%)	5(6.25%)	2.010	0.7340
	Unsure	2(4.167%)	0(0%)	1(9.09%)	3(3.75%)		
	Yes	43(89.58%)	20(95.2%)	9(81.8%)	72(90%)		
19. Have you ever been informed	No	15(31.25%)	5(23.8%)	4(36.4%)	24(30%)	0.6311	0.7294

by a healthcare provider about the link between oral health and systemic health?	Yes	33(68.75%)	16(76.2%)	7(63.6%)	56(70%)		
	No	2(4.167%)	0(0%)	0(0%)	2(2.5%)	3.464	0.4834
20. Do you think improving your oral health would positively impact your overall health?	Unsure	3(6.25%)	1(4.76%)	2(18.2%)	6(7.5%)		
	Yes	43(89.58%)	20(95.2%)	9(81.8%)	72(90%)		
	No	10(20.83%)	2(9.52%)	2(18.2%)	14(17.5%)	1.804	0.7718
21. Have you noticed any changes in your general health after addressing oral health issues?	Not applicable	9 (18.75%)	3 (14.3%)	2 (18.2%)	14 (17.5%)		
	Yes	29(60.42%)	16(76.2%)	7(63.6%)	52(65%)		
	Important	6(12.5%)	2(9.52%)	1(9.09%)	9(11.3%)	0.8942	0.9254
22. How important do you think it is to maintain good oral hygiene?	Not Important	1(2.083%)	0(0%)	0(0%)	1(1.25%)		
	Very Important	41(85.425%)	19(90.5%)	10(90.9%)	70(87.5%)		
	No	37(77.08%)	17(81%)	7(63.6%)	61(76.3%)	1.241	0.5376
23. Do you face any barriers in accessing dental care?	Yes	11(22.92%)	4(19%)	4(36.4%)	19(23.8%)		

Chi-square test, $p \leq 0.05$

4. DISCUSSION

Oral health is more than just having a bright smile or fresh breath, it is a critical component of overall well-being. The mouth is often referred to as the gateway to the body, and its conditions can reveal or influence various systemic health issues. Poor oral hygiene and untreated dental problems can lead to a cascade of health consequences that extend far beyond the oral cavity. The results presented in this study show a significant contribution of the impact of oral health on overall health.

5. CONCLUSION

The intricate relationship between oral health and overall health underscores the importance of treating oral care as an integral part of general health management. Poor oral hygiene and untreated dental issues are not isolated problems but contributors to systemic conditions.

Furthermore, the impact of oral health extends beyond the physical to influence mental well-being, quality of life, and social interactions. By prioritizing preventive oral care through regular dental visits, proper hygiene practices, and public health education, we can mitigate the risks and promote a holistic approach to health. Health professionals, policymakers, and individuals must recognize the mouth-body connection and work together to ensure that oral health is no longer overlooked in the broader context of healthcare. A healthy smile truly reflects a healthy body.

6. CONFLICTS OF INTEREST

The authors declare that they have no conflict of interest.

REFERENCES

- [1] Locker D. Concepts of oral health, disease and the quality of life. In: Measuring oral health and quality of life. Chapel Hill: University of North Carolina; 1997.
- [2] Ware JE, Gandek B. Overview of the SF-36 Health Survey and the international quality of life assessment (IQOLA) Project. *J Clin Epidemiol*. 1998;51(11):903–12.
- [3] Leão MM, Garbin CA, Moimaz SA, Rovida TA. Oral health and quality of life: an epidemiological survey of adolescents from settlement in Pontal do Paranapanema/SP. *Brazil Cien Saude Colet*. 2015;20(11):3365–74.
- [4] Zucoloto ML, Maroco J, Campos JADB. Psychometric properties of the oral health impact profile and new methodological approach. *J Dent Res*. 2014; 93(7):645–50.
- [5] Zucoloto ML, Maroco J, Campos JADB. Psychometric properties of the oral health impact profile and new methodological approach. *J Dent Res*. 2014; 93(7):645–50.
- [6] Zucoloto ML, Maroco J, Campos JADB: Psychometric Properties of the Short Form Health Survey (SF-36) in a Brazilian sample: Validation study. *BMC Health Services* 2015, in press.

