

Original Research Article

# ORAL HEALTH KNOWLEDGE, ATTITUDE AND PRACTICES OF PATIENTS VISITING DENTAL HOSPITAL RURAL CENTERS IN THE REGION OF LUDHIANA (PUNJAB)

Mohit Kumar<sup>1</sup>, Rajveer Mann<sup>2</sup>, Vivek Vardhan Gupta<sup>3</sup>, Neha Chitkara<sup>4</sup>, Preet Kanwal Atwal<sup>5</sup>, Shekhar Kapoor<sup>6</sup>, Karan Shai<sup>7</sup>

<sup>1</sup>Project Research Scientist, Department of Community Medicine, Christian Medical College, Ludhiana, India.

<sup>2</sup>BDS Intern, Christian Dental College, Ludhiana, Punjab, India.

<sup>3</sup>Associate Professor & Head, Department of Public Health Dentistry, Christian Dental College, Ludhiana, Punjab, India.

<sup>4</sup>Associate Professor, Department of Oral Medicine and Radiology, Christian Dental College, Ludhiana, Punjab, India.

<sup>5</sup>Professor, Department of Conservative and Endodontics, Christian Dental College, Ludhiana, Punjab, India.

<sup>6</sup>Professor & Head, Department of Oral Medicine and Radiology, Christian Dental College, Ludhiana, Punjab, India.

<sup>7</sup>BDS Intern, Christian Dental College, Ludhiana, Punjab, India.

Received : 05/09/2024  
Received in revised form : 12/11/2024  
Accepted : 28/11/2024

**Corresponding Author:**

**Dr. Vivek Vardhan Gupta,**  
Associate Professor & Head,  
Department of Public Health Dentistry,  
Christian Dental College, Ludhiana,  
Punjab, India.  
Email: drvivekpcd@gmail.com.

DOI: 10.70034/ijmedph.2025.1.40

Source of Support: Nil,  
Conflict of Interest: None declared

**Int J Med Pub Health**  
2025; 15 (1); 227-231

## ABSTRACT

**Background:** Oral health is integral to overall well-being, yet rural populations often face challenges in accessing adequate dental care. Understanding the knowledge, attitudes, and practices (KAP) of rural patients regarding oral health is critical for developing effective intervention programs.

**Aim:** To evaluate the oral health knowledge, attitudes, and practices of patients visiting dental hospital rural centers in Ludhiana, Punjab.

**Materials and Methods:** This cross-sectional study was conducted by Department of Public Health Dentistry of Christian Dental College and Hospital, Ludhiana. It included 600 patients aged 18–65 years visiting three different rural satellite clinics associated with the institute. Data was collected using a structured questionnaire covering demographic details and oral health KAP. Descriptive and inferential statistical analyses were conducted to assess associations between variables.

**Results:** The majority of participants demonstrated moderate knowledge of oral health, with 60% understanding the role of diet and oral hygiene in preventing dental issues. However, only 35% practiced twice-daily brushing, and floss use was negligible. Barriers to optimal dental care included fear of pain (50%), financial constraints (45%), and lack of awareness (40%). Attitudes were positive overall, with 70% recognizing the importance of dental visits, but regular utilization was limited.

**Conclusion:** Although participants exhibited reasonable oral health awareness, their practices lagged behind. This gap underscores the need for targeted educational initiatives and community-based programs to promote oral hygiene habits and overcome barriers to regular dental care in rural populations.

**Keywords:** Oral health, knowledge, attitude, practices, rural population, dental care, Ludhiana, barriers, oral hygiene, community-based programs.

## INTRODUCTION

A healthy mouth cavity is crucial for an individual's general health and well-being. Additionally, it allows an individual to chew, articulate, and engage socially without any significant discomfort or humiliation.<sup>[1]</sup> Oral health is today considered as crucial as general

health, supported by increasing data indicating connections between oral and systemic health for significant diseases such as cardiovascular disease, diabetes, obesity, arthritis, moderate cognitive impairment, and even cancer.<sup>[2,3]</sup>

Oral health influences the overall health, well-being, education, and development of children and their

families. India, the sixth largest country by area, is the second most populated nation. The increasing frequency of periodontal disease is attributed to inadequate oral health knowledge. Knowledge of oral health is seen a fundamental need for health-related behaviour. Despite a limited correlation between knowledge and conduct in cross-sectional studies, some research demonstrates a link between knowledge and improved oral health.<sup>[5]</sup>

Oral health education results in improved oral care practices. A favourable disposition towards oral health practices fosters the enhancement of oral habits as well. Oral cavity illnesses significantly affect an individual's social life. Periodontal disease may result in tooth loss, thus impacting the individual physically, emotionally, and financially. The pathology of the oral cavity frequently impacts both the aesthetics and functionality of the dento-maxillary apparatus. The aforementioned elements significantly influence an individual's everyday life and social interactions, thereby impacting their quality of life. In several developing nations, youngsters exhibit insufficient understanding of the aetiology and prevention of oral diseases.<sup>[8,9]</sup>

The KAP survey (Knowledge, Attitude, and Practice) utilises standardised questionnaires designed to yield both quantitative and qualitative data. The purpose of this study is to gather data on a certain target group's knowledge, their perceptions of what constitutes knowledge, and their actions concerning a particular subject, namely oral health. Limited research has been conducted to evaluate the extent of oral health-related knowledge, as well as the attitudes and habits of patients in India. This study aimed to ascertain the significance of oral health, particularly the knowledge, attitudes, and behaviours of the rural people in Ludhiana.

## **MATERIALS AND METHODS**

A cross-sectional questionnaire survey was conducted in April- June, 2022 amongst patients of age between 18 and 70 years, visiting three different rural satellite clinics associated with the institute. This study was conducted by Department of Public Health Dentistry of Christian Dental College and Hospital, Ludhiana. The age group followed the guidelines of the World Health Organization's oral health study guide, considering that all teeth except the third molars were erupted at this age. All study participants were requested to complete a comprehensive questionnaire form after signing consent form. The questionnaire was in English, Hindi and regional language (Punjabi) as well for easy and clear understanding of patients.

The questionnaire included 15 questions related to oral health knowledge (OHK), oral health attitude (OHA), oral health practices (OHP).

In order to better design the questionnaire and better understand what type of survey is best, the WHO Study Guide and the WHO Knowledge, Attitude and

Practice Survey Development Guide,<sup>[10,11]</sup> were consulted. Questionnaires used in other studies,<sup>[12-16]</sup> were also analyzed, and then an original questionnaire was formulated.

It consisted of 15 question-and-answer items—simple questions related to respondents' knowledge, attitudes and practices regarding oral hygiene. Questions related to oral health referred to the causes of dental caries, the reason for oral hygiene, what fluoride is, etc. Questions were also asked about teeth brushing, as well as questions about toothache and oral health information.

### **The questionnaire consisted of 4 parts**

1. Demographic details
2. Knowledge of oral health
3. Attitude towards oral health
4. Dental hygiene practices.

No exclusion criteria were applied, excepting cognitive disorders inhibiting the response to a questionnaire.

Subjects received detailed explanation of how to mark their responses. One of the investigators was always available during the completion of the questionnaire, and the participants were encouraged to approach him/her if any clarification was required. The data obtained were saved in an Excel file, and the statistical analysis took into account using SPSS version 22.

## **RESULTS**

Out of 600 patients, 54.2% were males and 45.8% were females. 37.8% participants belonged to 31-50 years age group followed by 18-30 years (31.5%) and >50 years (30.7%). [Table 1]

91.3% participants (92.3% men and 90.2% women) agreed that brushing teeth can prevent caries and 87.2% participants (87.1% men and 87.3% women) agreed that brushing teeth can also prevent gingival bleeding and tooth loss. 98.7% agreed (98.8% men and 98.5% women) that consumption of sweets increases the caries risk. 82.7% agreed that regular visits to the dentist can prevent dental problems. 76.2% agreed that fluoride helps in caries prevention. [Table 2]

97.8% participants (98.8% men and 96.7% women) believed that brushing teeth is very important. 88.7% participants think that oral health is also equally or more important than systemic health. 61% participants believe that dentist plays a role only in treatment part, but not in prevention of disease/decay. Majority of the participants (63.7%) believe that fear of pain is the main reason for avoiding the dentist while 14.3% believe that money is the main factor. Only 10.3% don't hesitate to visit a dentist. 47.7% participants had dental problems occasionally in the last year, while 18% had dental problems commonly and 30% rarely felt dental problem in last year. 4.3% participants never had dental problems in last year. [Table 3]

Out of 600 participants, 73.3% brush teeth once/ day, 11% were brushing twice/day, 3.8% were brushing more than twice/day. 5.3% were not brushing regularly and 5.3% were not brushing at all. 20.8% participants (26.8% men and 13.8% women) were using mouthwash, 2% were using dental floss, 14.7% were using tongue cleaner, and 62.5% were not using any other oral cleaning aids. Majority of the participants (60.3%) were not changing their

toothbrush after 3 months and 20.7% were not aware about it. 49.3% participants have visited dentist only on pain or any other oral health related problem. 17.7% participants haven't visited dentist earlier in their lifetime. Majority of the participants were habitual of having sweetened foods/ drinks everyday out of which 39.8% were having once/day, 26.7% were having 2-3 times/day and 18.2% were having more than 2-3 times per day. [Table 4]

**Table 1: Demographic details**

Variables	Number (n=600)	%	
Age (in years)	18-30	189	31.5
	31-50	227	37.8
	>50	184	30.7
Gender	Males	325	54.2
	Females	275	45.8

**Table 2: Knowledge based questions**

Knowledge parameters	Evaluation Index	Total (n=600)	Men (325)	Women (275)
Tooth brushing prevents caries	Agree	548 (91.3%)	300 (92.3%)	248 (90.2%)
	Disagree	43 (7.2%)	20 (6.2%)	23 (8.4%)
	Don't know	9 (1.5%)	5 (1.5%)	4 (1.4%)
Tooth brushing prevents gingival bleeding and tooth loss	Agree	523 (87.2%)	283 (87.1%)	240 (87.3%)
	Disagree	55 (9.2%)	30 (9.2%)	25 (9.1%)
	Don't know	22 (3.6%)	12 (3.7%)	10 (3.6%)
Consumption of sweets increases the caries risk	Agree	592 (98.7%)	321 (98.8%)	271 (98.5%)
	Disagree	8 (1.3%)	4 (1.2%)	4 (1.5%)
	Don't know	0 (0%)	0 (0%)	0 (0%)
Regular visits to the dentist can prevent dental problems	Agree	496 (82.7%)	265 (81.5%)	231 (84%)
	Disagree	85 (14.2%)	49 (15.1%)	36 (13.1%)
	Don't know	19 (3.1%)	11 (3.4%)	8 (2.9%)
Fluoride helps in caries prevention	Agree	457 (76.2%)	238 (73.2%)	219 (79.6%)
	Disagree	74 (12.3%)	47 (14.5%)	27 (9.8%)
	Don't know	69 (11.5%)	40 (12.3%)	29 (10.6%)

**Table 3: Attitude based questions**

Attitude parameters	Evaluation Index	Total (n=600)	Men (325)	Women (275)
Brushing teeth is very important	Agree	587 (97.8%)	321 (98.8%)	266 (96.7%)
	Disagree	13 (2.2%)	4 (1.2%)	9 (3.3%)
	Don't know	0 (0%)	0 (0%)	0 (0%)
The reason for avoiding the dentist	Fear of pain	382 (63.7%)	195 (60%)	187 (68%)
	Distance	47 (7.8%)	26 (8%)	21 (7.6%)
	Money	86 (14.3%)	52 (16%)	34 (12.4%)
	It is not a priority	23 (3.8%)	12 (3.7%)	11 (4%)
	I don't hesitate	62 (10.3%)	40 (12.3%)	22 (8%)
Frequency of discomfort caused by dental problems in the last year	Often	108 (18%)	54 (16.6%)	54 (19.6%)
	Occasional	286 (47.7%)	158 (48.6%)	128 (46.5%)
	Rare	180 (30%)	97 (29.8%)	83 (30.2%)
	Never	26 (4.3%)	16 (4.9%)	10 (3.7%)
Do you believe Dentist plays a role only in treatment part, but not in prevention of disease/ decay?	Agree	366 (61%)	202 (62.2%)	164 (59.6%)
	Disagree	151 (25.2%)	84 (25.8%)	67 (24.4%)
	Don't Know	83 (13.8%)	39 (12%)	44 (16%)
Do you think that Oral health is also equally or more important than systemic health?	Agree	532 (88.7%)	287 (88.3%)	245 (89.1%)
	Disagree	52 (8.7%)	32 (9.9%)	20 (7.3%)
	Don't Know	16 (2.7%)	6 (1.8%)	10 (3.6%)

**Table 4: Oral hygiene practices-based questions**

Practice parameters	Evaluation Index	Total (n=600)	Men (325)	Women (275)
Frequency of brushing teeth per day	Once a day	440 (73.3%)	253 (77.8%)	187 (68%)
	Twice a day	66 (11%)	39 (12%)	27 (9.8%)
	More than twice a day	23 (3.8%)	10 (3.1%)	13 (4.7%)
	Not on regular basis	32 (5.3%)	11 (3.4%)	21 (7.6%)
	Not at all	39 (6.5%)	12 (3.7%)	27 (9.9%)
Use of additional oral cleansing aids	Mouthwash	125 (20.8%)	87 (26.8%)	38 (13.8%)
	Dental floss	12 (2%)	8 (2.5%)	4 (1.4%)

	Tongue cleaner	88 (14.7%)	67 (20.6%)	21 (7.6%)
	Don't use	375 (62.5%)	163 (50.1%)	212 (77.1%)
Do you change your toothbrush After 3 months?	Yes	114 (19%)	83 (25.5%)	31 (11.3%)
	No	362 (60.3%)	178 (54.8%)	184 (66.8%)
	Never noticed	124 (20.7%)	64 (19.7%)	60 (21.9%)
When do you visit dentist	Once a year	130 (21.7%)	74 (22.8%)	56 (20.4%)
	After every 6 months	56 (9.3%)	32 (9.8%)	24 (8.7%)
	After every 3 months	12 (2%)	7 (2.1%)	5 (1.8%)
	On having Pain or any other problem	296 (49.3%)	167 (51.4%)	129 (46.9%)
	Never visited	106 (17.7%)	45 (13.9%)	61 (22.2%)
Frequency of consumption of sweetened foods/ drinks	Never	35 (5.8%)	20 (6.1%)	15 (5.5%)
	Rarely	57 (9.5%)	27 (8.3%)	30 (10.9%)
	Once/day	239 (39.8%)	130 (40%)	109 (39.6%)
	2-3 times/day	160 (26.7%)	87 (26.8%)	73 (26.5%)
	>2-3 times/day	109 (18.2%)	61 (18.8%)	48 (17.5%)

## DISCUSSION

The findings of this study reveal significant gaps between the participants' oral health knowledge, attitudes, and practices. While a substantial proportion of the participants demonstrated good knowledge of oral health, this awareness did not consistently translate into corresponding practices. This highlights the need for strategies that bridge the gap between knowledge and behavior.

In this study, 91.3% of participants understood that brushing teeth can prevent dental caries, and 87.2% knew it can prevent gingival bleeding and tooth loss. Furthermore, 97.8% believed brushing is important, which aligns with findings from prior studies like those of Nagarajappa et al.<sup>[17]</sup> However, only 11% of participants reported brushing twice daily—a figure lower than the 18.5% reported by Nagarajappa et al. This discrepancy may stem from a lack of reinforcement of oral hygiene practices during childhood, influenced by socioeconomic, familial, and cultural factors.

The study also identified alarmingly low usage of dental floss (2%) and tongue cleaners (14.7%), indicating limited adoption of comprehensive oral hygiene measures. This contrasts with higher figures reported in studies like Sen et al,<sup>[18]</sup> where floss and tongue cleaner usage were more prevalent. Some studies also found that none of the subjects used dental floss.<sup>[19,20]</sup> 14.7% percent of the participants reported that they clean their tongue, which was also very less in comparison to the study by Sen V et al,<sup>[18]</sup> and Jain et al,<sup>[19]</sup> where 42% and 20% of the studied population cleaned their tongue, respectively. The limited use of floss, in particular, underscores the urgent need to educate the public about its role in maintaining oral health.

Although 98.7% of participants recognized the risk of dental caries associated with sweet consumption, the frequency of daily sweet intake was high, with 84.7% consuming sweetened foods or drinks at least once daily. This reflects a gap between knowledge and dietary practices, emphasizing the importance of behavior modification strategies tailored to dietary habits.

The study revealed a concerning trend in dental visitation patterns. While 82.7% agreed that regular dental visits could prevent problems, only 33% reported regular visits to the dentist. Instead, 49.3% sought dental care only when experiencing pain, and 17.7% had never visited a dentist in their lifetime. Fear of pain (63.7%) was identified as the primary reason for avoiding dental visits, consistent with findings from studies by Nagarajappa et al,<sup>[17]</sup> and Humagain et al.<sup>[22]</sup> These findings highlight the need for public education campaigns to reduce dental anxiety and promote preventive care.

In terms of attitudes, 88.7% of participants believed that oral health is equally or more important than systemic health—a more favorable finding compared to studies like Kapoor et al,<sup>[23]</sup> where a larger proportion viewed oral health as less important. Nevertheless, 61% of participants mistakenly believed that dentists primarily focus on treatment rather than prevention, indicating a need for increased awareness about the preventive aspects of dentistry.

The present study demonstrates that while participants have a reasonable understanding of oral health, their attitudes and practices often do not align with this knowledge. This incongruity underscores the necessity for targeted interventions, such as school-based oral health programs, public awareness campaigns, and community-based dental education initiatives. Future efforts should aim to instill proper oral hygiene habits early in life and address barriers like fear and financial constraints to improve dental health outcomes.

Comparisons with prior studies show variability in oral health knowledge and behaviors across populations, highlighting the influence of cultural, educational, and socioeconomic factors. For instance, while this study found a low prevalence of twice-daily brushing, other studies in urban populations or higher socioeconomic groups report better compliance.<sup>[20,23]</sup> These differences underline the importance of tailoring oral health interventions to the specific needs and characteristics of the target population.

## CONCLUSION

This study reveals a gap between oral health knowledge and practices among patients visiting rural dental centers in Ludhiana. While participants had reasonable awareness, practices like twice-daily brushing, floss use, and regular dental visits were inadequate. Key barriers included fear of pain, financial constraints, and misconceptions about the preventive role of dentistry.

The findings highlight the need for targeted community-based programs to improve oral hygiene habits and promote regular dental care. Addressing these barriers through education and awareness campaigns is essential to enhancing oral health outcomes in rural populations.

## REFERENCES

1. Carneiro L, Kabulwa M, Makyao M, Mrosso G, Choum R. Oral health knowledge and practices of secondary school students, tanga, tanzania. *Int J Dent [Internet]* 2011; 2011:1–6.
2. Linden GJ, Lyons A, Scannapieco FA. Periodontal systemic associations: review of the evidence. *J Periodontol.* 2013;84(4 Suppl): S8–S19.
3. Schenkein HA, Loos BG. Inflammatory mechanisms linking periodontal diseases to cardiovascular diseases. *J Periodontol.* 2013;84(4 Suppl): S51–S69.
4. Kwan SY. Health promoting schools: an opportunity for oral health promotion. *Bulletin of the World Health Organisation.* 2005; 83:677–685.
5. Oral hygiene awareness and practice among patients attending OPD at Vyas Dental College and Hospital, Jodhpur Nitika Jain, DipikaMitra, KP Ashok, JyothiDundappa, SwetaSoni, Sameer Ahmed Department of Periodontics and Oral Implantology, Vyas Dental College and Hospital, Jodhpur, Rajasthan, India.
6. Cattoni F., Chirico L., Merlone A., Manacorda M., Vinci R., Gherlone E.F. Digital Smile Designed Computer-Aided Surgery versus Traditional Workflow in “All on Four” Rehabilitations: A Randomized Clinical Trial with 4-Years Follow-Up. *Int. J. Environ. Res. Public Health.* 2021; 18:3449.
7. Crespi R., Capparé P., Romanos G.E., Mariani E., Benasciutti E., Gherlone E. Corticocancellous porcine bone in the healing of human extraction sockets: Combining histomorphometry with osteoblast gene expression profiles in vivo. *Int. J. Oral Maxillofac. Implant.* 2011; 26:866–872.
8. Al-Tamimi, Petersen PE. Oral health situation of school children, mothers and school teachers in Saudi Arabia. *Int Dent J.* 1998; 48:180–86.
9. Petersen PE, Zhou E. Dental caries and oral health behaviour situation of children, mothers and schoolteachers in Wuhan, People’s Republic of China. *Int Dent J.* 1998; 48:210–16.
10. WHO. Advocacy, Communication and Social Mobilization for TB Control: A Guide to Developing Knowledge, Attitudes and Practices Surveys. World Health Organization; Geneva, Switzerland: 2008.
11. WHO. Oral Health Surveys: Basic Methods. 5th ed. World Health Organization; Geneva, Switzerland: 2013. pp. 1–125.
12. Varenne B., Petersen P.E., Ouattara S. Oral health behaviour of children and adults in urban and rural areas of Burkina Faso, Africa. *Int. Dent. J.* 2006; 56:61–70.
13. Liana C.W., Phingb T.S., Chata C.S., Shina B.C., Baharuddina L.H., Che’Jalila Z.B.J. Oral health knowledge, attitude and practice among secondary school students in Kuching, Sarawak. *Arch. Orofac. Sci.* 2010; 5:9–16.
14. Smyth E., Caamano F., Fernández-Riveiro P. Oral health knowledge, attitudes and practice in 12-year-old schoolchildren. *Med. Oral Patol. Oral Cir. Bucal.* 2007;12: E614–E620.
15. Harikiran A.G., Pallavi S.K., Hariprakash S., Ashutosh N.K.S. Oral health-related KAP among 11- to 12-year-old school children in a government-aided missionary school of Bangalore city. *Indian J. Dent. Res.* 2008; 19:236–242.
16. Kuppaswamy V.L., Murthy S., Sharma S., Surapaneni K.M., Grover A., Joshi A. Oral hygiene status, knowledge, perceptions and practices among school settings in rural South India. *Oral Health Dent. Manag.* 2014; 13:146–154.
17. Nagarajappa R, Sahare P, Shukla N, Tuteja JS, Bhalla A. Knowledge, Attitude and Practices Regarding Oral Health among Out Patients at Rama Dental College, Kanpur. *Rama Univ J Dent Sci.* 2015 Mar;2(1):8-14.
18. Sen N, Mandal A, Bhat N, Asawa K, Sultane P, Chhabra S, Chatterjee S, Vashishtha V. Oral Health-related Knowledge, Attitude, and Practices among Patients attending the Department of Public Health Dentistry of a Dental Hospital in Udaipur. *Int J PrevClin Dent Res* 2017;4(1):1-7.
19. Jain N, Mitra D, Ashok KP, Dundappa J, Soni S, Ahmed S. Oral hygiene-awareness and practice among patients attending OPD at Vyas Dental College and Hospital, Jodhpur. *J Indian SocPeriodontol* 2012 Oct;16(4):524-528.
20. Janjoom HM. Preventive oral health knowledge and practice in Jeddah, Saudi Arabia. *J KAU Med Sci*2001; 9:17-25.
21. Parveen N, Ahmed B, Bari A, Butt AM. Oro- dental health: Awareness and practices. *JUMDC* 2011; 2(2): 5-10.
22. Humagain M. Evaluation of Knowledge, Attitude and Practices (KAP) about oral health among secondary level students of rural Nepal- A Questionnaire study. *Webmed Central Dentistry* 2011; 2(3):01-17.
23. Kapoor D, Gill S, Singh A, Kaur I, Kapoor P. Oral hygiene awareness and practice amongst patients visiting the Department of Periodontology at a dental college and hospital in North India. *Indian J Dent* 2014 Apr;5(2):64-68.