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Oral Health Knowledge, Attitude, and Behaviour Among Primary and Secondary School Children in Jaipur, Rajasthan

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Abstract

Background: A child's knowledge, attitude, and habits toward oral health are vital for their dental well-being. Early education fosters healthy practices, preventing issues like cavities and gum disease, and promoting lifelong oral and overall wellness.

Aim: The aim of the study was to assess the attitudes, knowledge and practices among primary and secondary school children towards oral health and dental care in Jaipur, Rajasthan and to evaluate the factors determining these variables.

Methodology: The study involved 340 school children from Jaipur, divided into two age groups: 8–10 years in primary schools and 13–15 years in secondary schools. A structured questionnaire assessed their behaviour, knowledge, and perceptions of oral health and dental care.

Results: The study revealed that children valued healthy teeth for overall well-being but lacked knowledge of oral hygiene and periodontal care. Dental visits were rare, mostly driven by toothaches, and parents did not prioritize regular dental check-ups. Both children and parents need to improve their attitudes toward oral health.

Conclusion: Primary and secondary school students lack adequate oral health knowledge and practices. Strengthening awareness and enhancing oral health education programs are essential to fostering lifelong dental care habits for both children and their parents.

Keywords: Knowledge, Awareness, Practices, Oral hygiene, School children

INTRODUCTION

According to the World Health Organization (WHO), oral health is defined as the absence of chronic mouth and facial pain, oral and throat cancers, oral sores, tooth decay, tooth loss, and other oral disorders [1]. Although prevention and treatment have advanced, oral diseases like tooth decay and gum disease remain widespread, particularly among children in developing nations, creating major public health issues.

Encouraging healthy habits early increases the chances of long-term maintenance [2].School dental camps serve as a cost-effective way to provide oral health education to all children [3].

Evaluating oral health knowledge, attitudes, and awareness is critical for designing effective prevention programs. Knowledge includes understanding dental health, oral diseases, their causes, and prevention methods, aiming to encourage healthier habits. Attitudes reflect behaviour toward oral practices, while awareness indicates recognition of one's oral health status. Assessing these factors helps identify risks and shape strategies to promote positive behavioural changes through targeted information, motivation, and opportunities for healthy practices.[2],[4]

Despite efforts to raise awareness about children's oral health in Jaipur's suburban areas, poor oral hygiene and high dental caries rates persist. While a study in rural Bhanpur examined oral health knowledge among schoolchildren aged 10-15[5], comprehensive research on both primary and secondary school children in Jaipur is lacking. This study aims to evaluate their oral health knowledge, attitudes, and practices, as well as the factors influencing these aspects.

MATERIALS AND METHOD

A descriptive cross-sectional study was conducted with 340 cooperative children aged 8-10 years (Primary School) and 13-15 years (Secondary School) who could read and understand English. The study received ethical approval from Mahatma Gandhi Dental College and Hospital, Jaipur, with consent obtained from school heads. Schools from Jaipur's south suburban areas, Sitapura and Pratapnagar, participated. Principals informed students and parents about the study, and specific data collection days were scheduled. The children were divided into 2 major groups

Group 1: Aged 8-10 years or Primary School children

Group 2: Aged 13-15 years or Secondary School Children

On designated days, all children present from classes with the required age group were included in the study.

Questionnaire

This research employed a quantitative approach, utilizing a structured, self-administered paper-and-pencil questionnaire comprising 28 close-ended questions, adapted from studies by Al Omiri et al. [6] and Al Darwish et al [3].

The questionnaire was divided into four sections:

a) **Section 1:** Assessed knowledge and awareness regarding dental and general health.

b) **Section 2:** Evaluated oral hygiene habits.

c) **Section 3:** Explored knowledge and awareness concerning gingival and periodontal health.

d) **Section 4:** Examined attitudes towards professional dental care.

Children were thoroughly guided on scoring their responses, with the option to select multiple answers for certain items. The researcher was present to clarify any doubts, ensuring no duplication of answers and that each child completed only one questionnaire. After finishing, children remained in the classroom until everyone completed the survey and then submitted their questionnaires to the examiners.

RESULTS

Table 1: Knowledge and awareness of dental and general health among the study population

	Age grp 1	Age Grp 2	Total	Chi test
Does the health of mouth and dentition impact the health of the body?	N%	N%	N%	
Yes	129(75.8%)	143(84.1%)	272(80%)	0.009**
No	29(17%)	11(6.5%)	40(11.7%)	
Don't know	12(7.05%)	16(9.4%)	28(8.2%)	
What is the importance of teeth?				
Chewing	14(8.2%)	20(11.8%)	34(10%)	0.077#
Talking	0	2(1.2%)	2(0.6%)	
Appearance	10(5.9%)	3(1.7%)	13(3.8%)	
All of the above	146(85.9%)	145(85.3%)	291(86.6%)	
Which of the following can be a sign of tooth decay?				
Toothache	39(23%)	43(25.3%)	82(24.1%)	0.008**
Bleeding Gums	34(20%)	16(9.4%)	50(14.7%)	
Calculus	12(7%)	5(3%)	17(5%)	
Cavities in Teeth	85(50%)	106(62.3%)	191(56.2%)	
Does caries affect dental aesthetics?				
Yes	112(66%)	97(57%)	209(62%)	0.204#
No	21(12.4%)	23(13.5%)	44(13%)	
Don't know	37(26.4%)	48(28.2%)	85(25%)	
Do sweets affect dental health?				
Yes	156(92%)	156(92%)	312(92%)	0.921#
No	10(6%)	9(5.3%)	19(5.6%)	
Don't know	4(2.4%)	5(3%)	9(5.3%)	
Do soft drinks affect dental health?				
Yes	125(73.5%)	134(78.8%)	259(76.2%)	0.450#
No	34(20%)	29(17%)	63(18.5%)	
Don't know	11(6.5)	7(4%)	18(5.3%)	
Is treatment of toothache as important as any organ in the body?				
Yes	161(94.7%)	155(91.2%)	316(93%)	0.494#
No	3(1.8%)	6(3.5%)	9(2.6%)	
Don't know	6(3.5%)	9(5.3%)	15(4.4%)	

** Highly significant; # non-significant

Table 1 showed that children understood the importance of teeth for chewing, speaking, and appearance. Secondary children more often identified caries signs such as toothache (25.3%) and cavities (62.3%) than primary children. Dental caries' effect on appearance was recognized by 66% of younger and 57% of older children, though 28.2% of older children were unaware. Most were aware of sweets' (92%) and soft drinks' (76.2%) harmful effects. Around 80% acknowledged oral health's role in overall well-being, with older

children showing higher awareness (84.1%). Additionally, 93% valued treating toothache equally with other health issues.

Table 2: Oral Hygiene Habits among the study population

	Age grp 1	Age Grp 2	Total	Chi test
• Do you think it is important to keep your teeth clean?	N%	N%	N%	
Yes	168(98.8%)	169(99.4%)	337(99.1%)	0.562#
No	2(1.2%)	1(0.6%)	3(0.9%)	
• If "Yes", Why do you think it is important?				
To prevent Bad breath	3(1.8%)	4(2.3%)	7(2%)	0.177#
To Prevent Tooth Decay	7(4.1%)	3(1.8%)	10(3%)	
To keep Teeth Healthy and Beautiful	30(17.6%)	19(11.2%)	49(14.4%)	
All of the above	130(76.5%)	144(84.7%)	274((80.6%)	
• What are the oral hygiene methods used to clean the teeth?				
Toothbrush and paste	163(96%)	167(98.2%)	330(97.1%)	0.256#
Dental Floss	1(0.58%)	0	1(0.3%)	
Mouthwash	1(0.58%)	2(1.2%)	3(0.8%)	
Toothpicks	5(2.94%))	1(0.6%)	6(1.8%)	
• When should you clean your teeth?				
At Morning	25(14.7%)	38(22.3%)	63(18.5%)	0.193#
Before bed	3(1.8%)	2(1.2%)	5(1.5%)	
Before bed and at morning	135(79.4%)	127(74.7%)	262(77%)	
Other times	7(4.1%)	3(1.8%)	10(3%)	
• What is the role of parents in supervision of oral hygiene?				
Parents watch and advise	150(88.23%)	141(83%)	291(85.6%)	0.209#
Parents only advise but don't watch	13(7.65%)	23(13.5%)	36(10.6%)	
Parents never cared	7(4.12%)	6(3.5%)	13(3.8%)	

Table 2 highlighted that most children (99%) acknowledged the importance of clean teeth, with 80.6% recognizing benefits like preventing bad breath, tooth decay, and maintaining healthy teeth, more so in secondary children (84.7%). While 97% used a toothbrush and toothpaste, only 0.3% used dental floss, with no usage in older ones. Around 77% brushed twice daily, with higher awareness in younger children (79.4%). Morning brushing was more common in older children (22.3%) compared to younger ones (14.7%). Overall, 3% reported irregular brushing habits.

Table 3: Awareness of periodontal and gingival health among the study population

	Age grp 1	Age Grp 2	Total	Chi test
• What do you mean by bleeding gums? N%			N%	N%
Swelling and redness of gums	116(68.2%)	116(68.2%)	232(68.2%)	

Healthy gums	5(2.9%)	7(4.1%)	12(3.5%)	0.842#
Receding gums	7(4.1%)	6(3.5%)	13(3.8%)	
Don't know	41(24.1%)	41(24.1%)	82(24.1%)	
• How to prevent bleeding gums?				
Brushing and flossing	63(37%)	35(20.6%)	98(28.82%)	
Soft food	11(6.5%)	37(21.8%)	48(14.11%)	
Vitamin C	56(33%)	40(23.5%)	96(28.23%)	0.000**
Don't know	39(23%)	58(34.1%)	97(28.53%)	
• What does plaque mean?				
Soft deposits on teeth	13(7.6%)	19(11.2%)	32(9.4%)	
Heavy deposits on teeth	58(34.1%)	31(18.2%)	89(26.2%)	
Tooth discoloration	22(13%)	41(24.1%)	63(18.5%)	0.003**
Don't know	76(44.7%)	79(46.5%)	155(45.6%)	
• Can dental plaque lead to tooth decay?				
Yes	139(82%)	97(57%)	236(69.4%)	
No	11(6.5%)	17(10%)	28(8.2%)	0.000**
I Don't Know	20(11.8%)	56(33%)	76(22.4%)	

Table 3 revealed that about 68% of children recognized bleeding gums as a sign of gingivitis, with better awareness among primary children (37% identified prevention measures like brushing and flossing, compared to 21% of secondary children). Only a small percentage linked dental plaque to gingivitis (7.6% primary, 11.2% secondary), while many associated plaque with staining or discoloration. Overall, 45% failed to connect plaque with any conditions. However, most understood that plaque can lead to tooth decay, with primary children showing higher awareness (82%) than secondary children (57%).

Table 4: Attitudes towards professional dental care among the study population

	Age grp 1	**Age Grp 2**	**Total**	**Chi test**
N%	N%	N%		
How often do you visit the dentist?				
Regularly	60(35.3%)	19(11.2%)	79(23.2%)	
When in Pain	81(47.6%)	89(52.3%)	170(50%)	0.000*
Occasionally or never	29(17.1%)	62(36.5%)	91(26.8%)	
• Are regular visits to the dentist necessary?				
Yes	129(76%)	104(61.2%)	233(68.53%)	
No	31(18%)	50(29.4%)	81(23.82%)	0.036*
Don't know	10(6%)	16(9.4%)	26(7.65%)	
• When was the last time you visited your dentist?				
Within last month	37(21.8%)	31(18.24%)	68(20%)	
6 months ago	30(17.6%)	23(13.53%)	53(15.6%)	0.445#
More than 6 months ago	37(21.8%)	42(24.70%)	79(23.2%)	
Never	66(38.8%)	74(43.53%)	140(41.2%)	
• What was the reason for your last visit?				

Toothache	42(40.4%)	24(25%)	66(33%)	0.001**
Parents' advice	21(20.2%)	29(30.2%)	50(25%)	
Dentist's advice	30(28.8%)	16(16.7%)	46(23%)	
Other reasons	11(10.6%)	27(28.1%)	38(19%)	
• Does the dentist explain procedures before treatment?				
Yes	85(81.7%)	69(71.9%)	154(77%)	0.003**
No	15(14.4%)	8(8.3%)	23(11.5%)	
Don't know	4(3.8%)	19(19.8%)	23(11.5%)	
• Does the dentist cares properly about the patient?				
Yes	95(91.3%)	87(90.6%)	182(91%)	0.422#
No	6(5.8%)	3(3.1%)	9(4.5%)	
Don't know	3(2.9%)	6(6.3%)	9(4.5%)	
• Does the dentist cares about treatment but not prevention?				
Yes	27(26%)	26(27.1%)	53(27%)	0.028*
No	73(70.2%)	53(55.2%)	126(63%)	
Don't know	4(3.8%)	16(16.7%)	20(10%)	
• What was the treatment you sought in your last visit?				
Examination and check-up	59(56.7%)	30(31.3%)	89(44.5%)	0.000**
Scaling and gum treatment	15(14.4%)	8(8.3%)	23(11.5%)	
Fillings	9(8.7%)	7(7.3%)	16(8%)	
Crown or bridge	1(1%)	1(1%)	2(1%)	
Orthodontic treatment	0	2(2.1%)	2(1%)	
Extractions	5(4.8%)	4(4.2%)	9(4.5%)	
Fluoride application	0	2(2.1%)	2(1%)	
Others	15(14.4%)	42(44%)	57(28.5%)	
• Did you like your visit to the dentist?				
Yes	81(78%)	52(54%)	133(66.5%)	0.002**
No	23(22%)	44(46%)	67(33.5%)	
• If "No", what are the reasons behind not visiting/dislike visiting the dentist:				
Fear • of drilling • of needle • in waiting room • from thinking of tomorrow's appointment	 24(27%) 27(30.3%) 4(4.5%) 2(2.2%)	 13(11%) 15(12.7%) 5(4.2%) 0	 37(18%) 42(20.3%) 9(4.3%) 2(1%)	0.465#
High cost	4(4.5%)	1(0.8%)	5(2.4%)	0.000**
No clinic nearby	7(8%)	11(9.3%)	18(8.7%)	
No time	5(5.6%)	4(3.4%)	9(4.3%)	
No specific reason	16(18%)	69(58.4%)	85(41%)	

Would you like to visit your dentist again?				
Yes	83(79.8%)	51(53%)	134(67%)	0.000**
No	21(20.2%)	45(47%)	66(33%)	

*Statistically significant

Table 4 showed that while most primary (76%) and secondary (61.2%) children understood the importance of regular dental visits, fewer actually visited regularly (25.3% primary, 11.2% secondary). Secondary children mainly sought care for pain (52.3%) or avoided dentists (36.5%). Overall, 41.2% had never visited a dentist. Primary children were more positive about dental visits, with 78% enjoying and 79.8% willing to return, compared to lower rates in secondary children. Fear of needles (30.3%) and drilling (27%) deterred primary kids, while many secondary children gave no specific reasons for avoiding visits.

DISCUSSION

Oral health is vital for overall well-being, making it essential to instil good hygiene practices during childhood [2]. School-based oral health education for children and parents can raise awareness of poor hygiene's consequences and promote proper dental care habits [7].

This study provided a detailed analysis of the oral health knowledge, attitudes, and behaviour of 8-10 and 13-15-year-old school children regarding dental care. As limited systematic data exists on urban children's oral health in Jaipur, this is the first study of its kind. These age groups were selected for their ability to read, understand, and independently answer the questions.

The study found that 80% of children understood the connection between oral and general health, with older children (84.1%) showing greater awareness, particularly about tooth functions (86.6%). These results are consistent with studies by Al-Darwish [3], Wahengbam [8], and Wyne et al. [9], which highlight children's knowledge of maintaining healthy teeth. A majority (92%) recognized the negative effects of sweets on oral health, supporting Sharmila et al's [7] findings, though Varenne et al. reported lower awareness [10]. Older children (78.8%) were more aware of sweet drinks' effects than younger ones (73.5%), promoting better dental care.

This study found that 97.1% of participants used toothbrushes and toothpaste, consistent with findings by El-Qaderi & Taani et al [11], and Mehta et al [12]. While 77% brushed twice daily, higher than rates reported in Bhanpur (26.5%), Udaipur (35.8%), and Bengaluru (65.1%) by Nagaraj et al [5], Mathur and Gupta [13], and Siddaiah et al [2] respectively, the use of dental floss and mouthwash was rare in older children, aligning with Agrawal et al.'s observations [1 4].

The survey showed that 85.6% of children brushed their teeth daily with parental support, significantly higher than the 65.3% reported by Mathur and Gupta [13], possibly due to increased parental awareness. Younger children brushed under supervision more often than older children (88.3% vs. 83%). About 13% of older children brushed without supervision, reflecting teenagers' desire for independence and minimal family involvement.

This study found that 68.2% of children recognized gum disease symptoms, aligning with Al-Darwish's findings (63.5%) [3], but only 28.2% connected brushing and flossing to prevention, as noted by Al Omiri et al. [6]. Younger children (37%) showed more awareness of brushing's role in gingivitis prevention than older ones (20.3%). Awareness of dental plaque was low (9.4%), though 69.4% linked it to caries, with older children (57%) showing greater awareness than Sharda et al.'s findings (34.2%) [15]. Notably, 82%

of younger children were aware of plaque's harm, likely due to parental guidance. Including plaque education in schools may improve awareness.

The study found that 68.5% of participants, particularly younger children (76% vs. 61.2% older children), understood the importance of regular dental visits. However, half only sought care when in pain, consistent with findings by Lian CW et al. [16] and Parkar et al. [17]. Additionally, 41.2% of the population, mainly older children (43.5%), had never visited a dentist. Key barriers included fear, high costs, absence of toothache, and limited parental encouragement, as reported by Harikiran et al. and Punitha & Sivaprakasam [18,19]. Aligning with Joshi et al. [20], younger children showed more fear of needles (30.3%) and drills (27%), while 58.4% of older children reported no specific reasons for avoiding visits. Improved oral health education for children and parents could help overcome these challenges.

Among the 200 children who visited the dentist, most showed a positive attitude, with 91% believing dentists care for their patients and 77% appreciating their ability to explain and address issues. Primary children displayed a more favourable attitude than secondary children. Only 27% felt dentists prioritized treatment over prevention, highlighting their role in promoting oral disease awareness, as noted by Lian CW et al [16].

The most common reason for primary children visiting the dentist was routine dental check-ups, reflecting their understanding that regular visits help prevent periodontal disease and tooth decay. On the other hand, secondary children did not disclose the treatment they received during their last visit.

Two-thirds of children enjoyed their dental visits, with primary children (78%) showing more enthusiasm than secondary children (54%). Similarly, 79.8% of primary children expressed willingness to return, compared to 53% of secondary children. This difference may stem from pediatric clinics' colourful, playful designs that ease anxiety and create a welcoming atmosphere.

CONCLUSION

This study highlights the need to enhance oral health education among schoolchildren in Jaipur, as their current knowledge and practices are insufficient. Implementing continuous school-based programs and involving parents in educational initiatives are crucial steps toward improving children's oral health. Parental education has been shown to positively influence children's oral health behaviour

Partnering with institutions focused on public oral health can enhance these initiatives, promoting lifelong oral care habits among children and the wider community through targeted strategies and collaboration.

REFERENCES

1. Ministry of Health and Family Welfare, Government of India. Operational Guidelines. National Oral Health Program. Available at: https://mohfw.gov.in/sites/default/files/5131856375 1452762792_0.pdf. Accessed on 20 August 2019.
2. Siddaiah SB, Ramachandra JA, Mehta DV, et al. Assessment of Oral Health Awareness among Residential and Day School-going Children in South Bengaluru: A Questionnaire-based Survey. World J Dent 2021;12(3):234–240.
3. Al-Darwish MS, Abuhassna M, Al-Thomairy SA. Oral health knowledge and sources of oral health information among school children in Qatar. Journal of Dental Health, Oral Disorders & Therapy. 2015 May;2.
4. Smyth E, Caamaño F, Fernández-Riveiro P. Oral health knowledge, attitudes and practice in 12-year-old schoolchildren. Med Oral Patol Oral Cir Bucal. 2007 Dec 1;12(8):E614-20. © Medicina Oral S.

L. C.I.F. B 96689336 - ISSN 1698-694

5. Nagaraj, Anup[1]; Deka, Barsha Priya[2]; Tambi, Swasti[3]; Sarma, Shruti Madhuri[4]; Mathur, Gaurav[5]. An insight regarding oral hygiene among 10–15-year-old schoolchildren in the rural area of Jaipur district – A questionnaire study. International Journal of Preventive and Clinical Dental Research 10(3):p 50-55, Jul–Sep 2023. | DOI: 10.4103/ijpcdr.ijpcdr_17_23
6. Al-Omiri MK, Al-Wahadni AM, Saeed KN. Oral health attitudes, knowledge, and behavior among school children in North Jordan. Journal of dental education. 2006 Feb;70(2):179-87.
7. MK JS, Umadevi R, VM AE. Knowledge, attitude and practice on oral hygiene among primary school children in an urban area of Kancheepuram district, Tamil Nadu. Int J Community Med Public Health. 2019;7(1):311.
8. Wahengbam PP, Kshetrimayum N, Wahengbam BS, Nandkeoliar T, Lyngdoh D. Assessment of oral health knowledge, attitude and self-care practice among adolescents-a state wide cross-sectional study in Manipur, North Eastern India. Journal of clinical and diagnostic research: JCDR. 2016 Jun 1;10(6):ZC65.
9. Wyne AH, Chohan AN, Al-Dosari KH, et al. Oral health knowledge and sources of information among male Saudi school children. Dentist 2004;69:53–61.
10. Varenne B, Petersen PE, Ouattara S. Oral health behaviour of children and adults in urban and rural areas of Burkina Faso, Africa. Int Dent J 2006;56(2):61–70. DOI: 10.1111/j.1875-595X.2006.tb00075.x
11. El-Qaderi SS, Taani DQ. Oral health knowledge and dental health practices among school children in Jerash district/Jordan. Int J Dent Hyg 2004;2:78-85
12. Mehta A, Kaur G. Oral health-related knowledge, attitude, and practices among 12-year-old school children studying in rural areas of Panchkula, India. Indian J Dent Res 2012;23:293.
13. Mathur A, Gupta T. Oral health attitude knowledge behavior and consent towards dental treatment among school children. Journal of orofacial research. 2011;1(1):06-10.
14. Agrawal R, Shrivastava S, Reche A, Wasnik MT, Sangha KS, Patil SR. Assessment of degree of dental awareness in schoolchildren aged 10-15 years in Bilaspur District, Chhattisgarh: A cross-sectional study. J Indian Assoc. Public Health Dent 2021;19:224-9.
15. Sharda AJ, Shetty S, Ramesh N, Sharda J, Bhat N, Asawa K. Oral Health Awareness and Attitude among 12-13 year old school children in Udaipur, India. Int J Dent Clin. 2011 Oct 1;3(4):16-9.
16. Lian CW, Phing TS, Chat CS, Shin BC, Baharuddin LH, Jalil ZB. Oral health knowledge, attitude and practice among secondary school students in Kuching, Sarawak. Archives of orofacial Sciences. 2010 Jan 1;5(1):9-16.
17. Parkar S, Sharma A, Shah N. Awareness, perception and practices regarding oral health among school-going adolescents in Ahmedabad City, India. Romanian JouRnal of Stomatology. 2023 Oct 1;69(4):220.
18. Harikiran AG, Pallavi SK, Hariprakash S, Ashutosh, Nagesh KS. 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;19:236-42. doi: 10.4103/0970-9290.42957. PMID: 18797101.
19. Punitha VC, Sivaprakasam P. Oral hygiene status, knowledge, attitude and practice of oral health among rural children of Kanchipuram District. Indian J Multidiscip Dent 2011;1:115-8
20. . Joshi N, Rajesh R and Sunitha M. Prevalence of dental caries among school children in Kulasekharam village: A correlated prevalence survey. J Indian Soc Pedod Prev Dent. 2005; 23(3):138-140. doi:

10.4103/0970- 4388.16887
21. Biesbrock A, Corby PM, Bartizek R, Corby AL, Coelho M, Costa S, Bretz WA and Bretz WA (2006). Assessment of treatment responses to dental flossing in twins. J Periodontol, 77(8): 1386-1391.