




Sources of Oral Health Information and its Relationship on Knowledge Among Indian Adolescents

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ABSTRACT

Objective: To assess the current level of oral health knowledge and identify information sources among adolescents in Bhubaneswar, India. **Material and Methods:** A cross-sectional examination was conducted among 1330 adolescents aged 13 to 15 years enrolled in 24 randomly selected government and private schools in Bhubaneswar. A specially designed self-administered questionnaire was used to collect the responses. Chi-square test with a level of significance set at 5% was used for statistical analysis. **Results:** Parents (55%) followed by media (18%) were the major sources of oral health information among the study population, which was statistically not significant in relation to gender and school type. Many subjects (95.3%) perceived sweets could cause tooth decay; however, this was statistically significant only among school type ($p < 0.05$). Around (45%) knew about fluoride and only 36% properly identified fluoride's action as preventing cavities. This was statistically significant among both gender and school type ($p < 0.05$). Seventy-five percent of students effectively distinguished gum disease symptoms, which was significant only with gender ($p < 0.05$). Around 55% identified that oral habits have an influence on oral health, which showed significance among gender ($p < 0.05$). **Conclusion:** Children oral health knowledge was not satisfactory, highlighting the need to utilize parents, schoolteachers and media to provide oral health education. It's essential for designing and implementing a person-centered care model in dentistry.

Keywords: Adolescent; Dental Care; Health Knowledge, Attitudes, Practice.

Introduction

Children are the most valuable part of a community and it is an ethical obligation to bestow them with healthy living habits. Healthy habits, when shaped early in life, have demonstrated to be beneficial [1]. Several studies have reported that parents and school teachers can assume a significant job in grooming healthy habits in children [2-4].

In studies on predominant chronic diseases, additional accentuation has been positioned on the influence of health behavior in place of standard risk factors [5]. This concept has unfolded to the field of dentistry as well. In fact, oral diseases can be averted by using right oral health behaviour [6,7]. Furthermore, oral health behavior is also associated with various factors together with dental expertise [8,9], attitude [9], lifestyle [10], stress [11,12], schooling level [13], socioeconomic status [14], feel of coherence [15], and self-efficacy [16].

Evidence has demonstrated that virtuous knowledge of oral health is a prerequisite for better oral care practices and those with better information on dental care showed more positive attitude towards oral health care [17]. Besides the oral health knowledge, other variables identified with oral health behavior and practices are age, gender, attitude toward general health and access to oral health services [9]. A suitable oral health education can improve healthy oral health behavior and practice [17,18]. In order to advance such oral health education program, the evaluation of current knowledge and practice of the subjects is essential.

An investigation has proposed that school is important for children's oral health education as a source of dental knowledge [19]. Moreover, dental knowledge from dental clinics might be successful in altering oral health behaviour [20,21]. In this manner, there might be effective assets of dental information that contribute to oral health behavior. However, few researches have stated the effect of various sources of dental knowledge on oral health behavior. As indicated by these outcomes, it can be hypothesized that both the source of dental knowledge and dental knowledge itself correlate with oral health behavior in students.

In spite of the fact that reports are accessible on dental health knowledge and sources of information of parents and school teachers [22], documentation of children's sources on oral health information has been restricted [23,24]. However, there are no such reports available among adolescents of Bhubaneswar, India. Therefore, the objective of this study was to assess the existing level of oral health knowledge and identify the sources of oral health information among adolescents in Bhubaneswar, India.

Material and Methods

Study Design

This descriptive cross-sectional survey was steered between January 2019 to March 2019 among 1330 adolescents of Bhubaneswar, India. Adolescents who were permanent residents of Bhubaneswar city, aged between 13 and 15 years and were logically and physically proficient in responding to the self-administered questionnaire in either Odia or English language, were comprised in the study. A total of 1400 questionnaires, along with the consent form, were distributed among the study participants. Children who did not give their assent to participate (n=46) and those not present on the day of survey (n=24) were excluded.

Compilation of Study Subjects

Sampling frame consists of 13 and 15 years adolescents attending various schools in Bhubaneswar. Study sample were registered by a two-stage stratified random sampling procedure. In the first stage, Bhubaneswar city was alienated into four topographical areas, and six schools (three Government and three

private) from each area were randomly chosen. Of the total number of Government (n=65) and private schools (n=119), 12 each of Government and private schools were randomly picked. In the second stage, eligible subjects were stratified by age and gender and randomly selected in proportion to the aggregate number of participants available in each school, which was accomplished for a sample of 1330.

Pre-Testing Survey

A structured self-administered close-ended questionnaire was utilized to evaluate oral health information among adolescents, planned together by the research group with an expert opinion of a paediatric dentist and a public health dentist. Original form of the questionnaire was written in English and translated into Odia. An independent and professional translator performed the interpretation. Finally, another autonomous interpreter returned interpretations, which were additionally contrasted with the originals, and inconsistencies were scrutinized and amended. The questionnaire was intended to be conceivable for the secondary school students and was pretested on a gathering of 25 children. Face validity shows whether the instrument gives off an impression of being evaluating the ideal characteristics. When face validity was evaluated, it was seen that 94% of participants saw the questionnaire as simple. Evaluation of content validity mirrors a judgment whether the instrument tests all the pertinent or significant domains. Mean content validity proportion was determined as 0.82, dependent on the feelings communicated by a board of four academicians. Trial of reliability involved two components: Question-question reliability, which was evaluated by level of understanding (88%) and internal reliability for the reactions to questions, which was surveyed utilizing Cronbach's alpha coefficient (0.86). Appropriate changes were presented in the primary investigation.

Data Collection

The 27-item questionnaire on appraisal of children's oral health information included items on the significance of dental well-being to general well-being, functions of teeth, frequency of brushing teeth, best brushing aids, attitudes toward normal dental visits, the impacts of utilizing fluoride on teeth, indications of tooth decay, symptoms of gum diseases, the methods for keeping gums healthy, and the importance of plaque and its consequences on teeth. Additionally, the sources of oral health information were also documented.

The nature and purpose of study were explained to the participants. Its voluntary nature was emphasized and confidentiality was assured. Children received a full clarification of how to score their responses and were made mindful that they needed to pick just one proper answer for all items. The questionnaire was distributed to study subjects by a single investigator, gave adequate time to fill it and collected on the spot after completion. During this process, the investigator was available to children for any clarifications with the questionnaire, simultaneously assured that the respondents answered sincerely without any access to other sources and also established that every question was answered.

The total estimate of oral health knowledge and information sources was determined from responses to the 27 items questionnaire by furnishing each right response 1 mark and each wrong response 0 marks, with 21 as the most extreme conceivable score. The score of oral health knowledge, behaviour and practices scale was constructed based on the numbers of correct responses. Respondents were stratified into groups by level of knowledge: low (<9 answers right), medium (9–18 right), and high (19 or more answers right); the higher the score, the better oral health knowledge [24].

Statistical Analysis

The data collected was subjected for statistical analysis using SPSS version 21.0 (SPSS Inc., Chicago, Illinois, USA). Information procured were esteemed suitable for utilizing parametric tests since the outcomes were normally distributed, as seen by Shapiro Wilk test. Descriptive statistics were used to summarize the data. Chi-square test (χ^2) was used to assess the relationship between categorical variables. For all tests, confidence interval and p-value were set at 95% and < 0.05 , respectively.

Ethical Approval

The survey process was accepted by Institutional Ethical Committee (Protocol No. DMR/IMS.SH/SOA/190047). Prior to initiation of primary investigation, a certified list of Bhubaneswar city schools was obtained from District Education Office (DEO). An official authorization from respective Heads of selected schools and also consent from the parents were obtained.

Results

An aggregate of 1330 adolescents, 610 (45.9%) males and 720 (54.1%) females consented and participated in the study. A nearly equivalent representation was observed with the mean age of 14.2 ± 1.3 years. A proportion of 43.8% of students represented government schools (Table 1).

Table 1. Demographic characteristics of study participants.

Characteristics	N (%)
Age (in years)	
13	422 (31.7)
14	456 (34.3)
15	452 (34)
School Type	
Government	583 (43.8)
Private	747 (56.2)

Table 2 features the reported primary sources of adolescents information on oral health knowledge according to gender and school type. More than half of the students, 332 (54.5%) males and 420 (58.3%) females, acquired oral health knowledge from parents followed by media (television, radio, newspaper, journal) around 20.6%, dentists (13.9%), friends/relatives (6.4%). Conversely, few youngsters ($<3\%$) picked teachers as their source of obtaining oral health information. According to gender, despite the fact that parents were the most popular source of oral health information, it was, to some degree, higher for female than male students. A similar pattern was observed, rendering school type also. A higher number of private (5.3%) compared to (2.2%) government school children cited as school teachers. None of the sources reported were statistically significant ($p>0.05$) both between the gender and or school type.

Table 2. Sources of oral health information according to gender and school type.

Sources	Gender		School Type	
	Male N (%)	Female N (%)	Government N (%)	Private N (%)
Parents	332 (54.5)	420 (58.3)	357 (61.2)	467 (62.5)
School Teachers	13 (2.1)	24 (3.4)	13 (2.2)	40 (5.3)
Friends/Relatives	57 (9.3)	25 (3.5)	22 (3.8)	16 (2.2)
Dentist	76 (12.5)	110 (15.3)	78 (13.4)	121 (16.2)
Media ¹	132 (21.6)	141 (19.5)	113 (19.4)	103 (13.8)
Total	610 (45.9)	720 (54.1)	583 (43.8)	747 (56.2)

¹Media: Internet, Television, Newspaper, Magazines, etc.; *Chi-square test, $p>0.05$.

The study participants' responses to questions on knowledge about dental disease and preventive agents proposed differing degrees of comprehension of these ideas (Table 3). A greater proportion, 1192 (89.6%) of the children, knew that great dental well-being is significant for good general well-being. A large portion of the children was aware of the significance of the teeth in biting, talking, and appearance (88.6%). Practically all kids (99%) think it is critical to keep teeth clean, and 95.3% realized that clean teeth prevent bad breath, avert tooth decay, and keep teeth healthy and beautiful. More than half the study population (54%) responded for twice cleaning to maintain oral health, which was significant in relation to gender ($p < 0.05$). Toothbrush (95%) was rated as best cleaning aid. More than half (54.2%) practiced twice a day toothbrushing, followed by only once a day (45.9%). After every meal, tooth brushing was practiced by an exceptionally little group of children, only 46 (3.5%). About (57.6%) of the children perceived dental floss as a cleaning gadget for between the teeth, which implies that the significance of cleaning between teeth was obviously well known. This was statistically significant among both gender and school type ($p < 0.05$).

Table 3. Response to knowledge-based questions on oral health according to gender and school type.

Questions	Gender		Total	p-value	School		Total	p-value
	Male N (%)	Female N (%)			Government N (%)	Private N (%)		
Do you think a relationship exists between good oral health and good general health?								
Yes#	532 (87.2)	660 (91.7)	1192 (89.6)	0.235	470 (80.6)	696 (93.2)	1166 (87.7)	0.321
No	28 (4.6)	21 (2.9)	49 (3.7)		23 (3.9)	13 (1.7)	36 (2.7)	
I don't know	50 (8.2)	39 (5.4)	89 (6.7)		90 (15.5)	38 (5.1)	128 (9.6)	
How often one must visit the dentist?								
Every three months	192 (31.5)	211 (29.3)	403 (30.3)	0.201	180 (30.9)	240 (32.1)	420 (31.6)	0.206
Every six months#	211 (34.6)	316 (43.9)	527 (39.6)		214 (36.7)	296 (39.6)	510 (38.3)	
Once a year	118 (19.3)	120 (16.7)	238 (17.9)		133 (22.8)	134 (18)	267 (20.1)	
Only when pain in your tooth	89 (14.6)	73 (10.1)	162 (12.2)		56 (9.6)	77 (10.3)	133 (10)	
What is the importance of teeth?								
Chewing	58 (9.5)	20 (2.8)	78 (5.9)	0.321	50 (8.6)	16 (2.1)	66 (5)	0.211
Talking	19 (3.1)	06 (0.8)	25 (1.9)		35 (6.0)	14 (1.9)	49 (3.7)	
Appearance	19 (3.1)	29 (4.0)	48 (3.6)		26 (4.5)	28 (3.8)	54 (4.1)	
All of the above#	514 (84.3)	665 (92.4)	1179 (88.6)		472 (80.9)	689 (92.2)	1161 (87.3)	
Do you think it is important to keep your teeth clean?								
Yes#	600 (98.4)	717 (99.6)	1317 (99)	0.121	567 (97.3)	741 (99.2)	1308 (98.3)	0.751
No	10 (1.6)	03 (0.4)	13 (1.0)		16 (2.7)	06 (0.8)	22 (1.7)	
If yes, what is the need for keeping our teeth clean?								
To prevent bad breath	15 (2.4)	05 (0.7)	20 (1.5)	0.245	13 (2.2)	04 (0.5)	17 (1.3)	0.755
To prevent tooth decay	04 (0.7)	03 (0.4)	07 (0.5)		01 (0.2)	02 (0.3)	03 (0.2)	

To keep teeth healthy and beautiful	26 (4.3)	12 (1.7)	38 (2.9)		24 (4.1)	19 (2.5)	43 (3.2)	
All of the above [#]	565 (92.6)	700 (97.2)	1265 (95.1)		545 (93.5)	722 (96.7)	1267 (95.3)	
Teeth should be cleaned at least								
Once a day	316 (51.8)	294 (40.8)	610 (45.9)	0.041*	292 (50.1)	270 (36.2)	562 (42.3)	0.077
Twice a day [#]	264 (43.2)	406 (56.4)	670 (50.4)		278 (47.7)	443 (59.3)	721 (54.2)	
After each meal	26 (4.3)	19 (2.6)	45 (3.4)		13 (2.2)	33 (4.4)	46 (3.5)	
Once a week	04 (0.7)	01 (0.1)	05 (0.4)		00 (0.0)	01 (0.1)	01 (0.1)	
Which of the following is the best cleaning aid?								
Tooth brush [#]	570 (93.4)	692 (96.1)	1262 (94.9)	0.357	549 (94.2)	715 (95.7)	1264 (95)	0.241
Dental floss	14 (2.3)	11 (1.5)	25 (1.9)		08 (1.4)	05 (0.7)	13 (1.0)	
Mouth wash	16 (2.6)	15 (2.1)	31 (2.3)		15 (2.6)	21 (2.8)	36 (2.7)	
Tooth pick	10 (1.6)	02 (0.3)	12 (0.9)		11 (1.9)	06 (0.8)	17 (1.3)	
The best way to clean between your teeth is to								
Use a tooth brush	243 (39.8)	240 (33.3)	483 (36.6)	0.023*	241 (41.3)	244 (32.7)	485 (36.5)	0.015*
Use dental floss [#]	319 (52.3)	445 (61.8)	764 (57.4)		295 (50.6)	471 (63.1)	766 (57.6)	
Use tooth pick	39 (6.4)	31 (4.3)	70 (5.3)		24 (4.2)	28 (3.7)	52 (3.9)	
I don't know	09 (1.5)	04 (0.6)	13 (1)		23 (3.9)	04 (0.5)	27 (2)	
Which of the following can be a sign of tooth decay?								
Toothache	357 (58.5)	410 (56.9)	767 (57.7)	0.324	314 (53.9)	420 (56.2)	734 (55.2)	0.201
Bleeding gums	29 (4.8)	23 (3.2)	52 (3.9)		51 (8.7)	36 (4.8)	87 (6.5)	
Calculus	82 (13.4)	43 (6)	125 (9.4)		65 (11.1)	64 (8.6)	129 (9.7)	
Cavities in teeth [#]	142 (23.3)	244 (33.9)	386 (29)		153 (26.2)	227 (30.4)	380 (28.6)	
Which of the following diet causes tooth decay? [@]								
Sweets (chocolate/candies) [#]	575 (94.3)	693 (96.2)	1268 (95.3)	0.741	544 (93.3)	713 (95.4)	1257 (94.5)	0.361
Soft drinks [#]	331 (54.3)	436 (60.6)	767 (57.7)		328 (56.3)	474 (63.4)	802 (60.3)	
Fresh milk	07 (1.1)	06 (0.8)	13 (1.0)		08 (1.4)	09 (1.2)	17 (1.3)	
Vegetables	86 (14.1)	91 (12.6)	177 (13.3)		73 (12.5)	104 (13.9)	177 (13.3)	
Sweetened milk [#]	44 (7.2)	122 (16.9)	166 (12.5)		54 (9.3)	99 (13.2)	153 (11.5)	
Fresh fruits	16 (2.6)	04 (0.6)	20 (1.5)		11 (1.9)	7 (0.9)	18 (1.4)	
What snack foods are best for teeth? [@]								
Raisins	442 (72.4)	538 (74.7)	980 (73.7)	0.231	411 (70.5)	570 (76.3)	981 (73.8)	0.121
Candy bars	15 (2.4)	15 (2.1)	30 (2.3)		9 (1.5)	15 (2)	24 (1.8)	
Cheese [#]	540 (88.5)	652 (90.6)	1192 (89.6)		520 (89.2)	690 (92.4)	1210 (91)	
Ice cream	138 (22.6)	176 (24.4)	314 (23.6)		120 (20.5)	175 (23.4)	295 (22.2)	
Nuts [#]	326 (53.4)	410 (56.9)	736 (55.3)		343 (58.8)	450 (60.2)	793 (59.6)	
How can I avoid tooth decay?								

By maintaining good dental hygiene	95 (15.6)	87 (12.1)	182 (13.7)	0.215	83 (14.2)	93 (12.4)	176 (13.3)	0.023*
By eating less sweets	27 (4.4)	38 (5.3)	65 (4.9)		50 (8.5)	28 (3.8)	78 (6.2)	
By using fluoride	16 (2.7)	24 (3.3)	40 (3)		14 (2.5)	23 (3.1)	37 (2.8)	
By visiting dentist regularly	88 (14.4)	33 (4.6)	121 (9.1)		65 (11.1)	40 (5.3)	105 (8.2)	
All of the above [#]	384 (62.9)	538 (74.7)	922 (69.3)		371 (63.7)	563 (75.4)	934 (69.5)	
What is a dental sealant?								
A coating that keeps away gums from bleeding	40 (6.6)	45 (6.3)	85 (6.4)	0.214	45 (7.7)	51 (6.8)	96 (7.2)	0.369
A plastic coating put on teeth to protect them from decay [#]	164 (26.9)	217 (30.1)	381 (28.6)		158 (27.1)	231 (30.9)	389 (29.2)	
A kind of tooth filling	180 (29.5)	246 (34.2)	426 (32)		166 (28.5)	242 (32.4)	408 (30.7)	
I don't know	226 (37)	211 (29.3)	437 (32.9)		214 (36.7)	223 (29.8)	437 (32.9)	
Have you heard about fluoride?								
Yes [#]	203 (33.3)	326 (45.3)	529 (39.8)	0.012*	229 (39.3)	365 (48.9)	594 (44.7)	0.041*
No	407 (66.7)	394 (54.7)	801 (60.2)		354 (60.7)	382 (51.1)	736 (55.3)	
What does fluoride do?								
It makes teeth white	72 (11.8)	105 (14.6)	177 (13.3)	0.031*	72 (12.3)	99 (13.3)	171 (12.8)	0.014*
It helps protect teeth from decay [#]	162 (26.6)	243 (33.7)	405 (30.4)		174 (29.9)	299 (40)	473 (35.6)	
It makes teeth grow	06 (1)	03 (0.4)	09 (0.7)		08 (1.4)	06 (0.8)	14 (1.1)	
I don't know	370 (60.6)	369 (51.3)	739 (55.6)		329 (56.4)	343 (45.9)	672 (50.5)	
The best way to get fluoride is to								
Have a dentist put fluoride on your teeth	26 (4.2)	50 (6.9)	76 (5.7)	0.680	34 (5.8)	34 (4.5)	68 (5.1)	0.325
Brush your teeth with fluoride tooth paste	212 (34.8)	279 (38.8)	491 (36.9)		212 (36.4)	292 (39.1)	504 (37.9)	
Drink water that has fluoride in it [#]	14 (2.3)	30 (4.2)	44 (3.3)		25 (4.3)	46 (6.2)	71 (5.3)	
I don't know	358 (58.7)	361 (50.1)	719 (54.1)		312 (53.5)	375 (50.2)	687 (51.7)	
Healthy gums do not bleed								
True [#]	419 (68.7)	568 (78.9)	987 (74.2)	0.015*	409 (70.2)	592 (79.3)	1001 (75.3)	0.081
False	62 (10.2)	46 (6.4)	108 (8.1)		58 (9.9)	51 (6.8)	109 (8.2)	
I don't know	129 (21.1)	106 (14.7)	235 (17.7)		116 (19.9)	104 (13.9)	220 (16.5)	
Blood on your tooth brush may be a sign of								
Gum disease [#]	469 (76.9)	573 (79.6)	1042 (78.3)	0.285	440 (75.5)	595 (79.7)	1035 (77.8)	0.358
Tooth decay	54 (8.8)	54 (7.5)	108 (8.1)		48 (8.2)	53 (7.1)	101 (7.6)	
I don't know	87 (14.3)	93 (12.9)	180 (13.6)		95 (16.3)	99 (13.2)	194 (14.6)	
Symptoms of gum disease include								
Swelling and redness of gums	71 (11.6)	42 (5.8)	113 (8.5)	0.038*	60 (10.3)	51 (6.8)	111 (8.4)	0.985
Bad smell from mouth	56 (9.2)	42 (5.8)	98 (7.4)		52 (8.9)	31 (4.2)	83 (6.2)	
Bleeding from gums	75 (12.3)	59 (8.3)	134 (10.1)		74 (12.7)	71 (9.5)	145 (10.9)	
All of the above [#]	408 (66.9)	577 (80.1)	985 (74.1)		397 (68.1)	594 (79.5)	991 (74.5)	

The best way to keep your gums healthy								
Eat a good diet	54 (8.9)	72 (10)	126 (9.5)	0.514	51 (8.8)	83 (11.1)	134 (10)	0.924
Clean your teeth everyday [#]	395 (64.7)	516 (71.6)	911 (68.5)		383 (65.7)	540 (72.3)	923 (69.4)	
Take vitamins	38 (6.2)	30 (4.2)	68 (5.1)		52 (8.9)	10 (1.3)	62 (4.7)	
I don't know	123 (20.2)	102 (14.2)	225 (16.9)		97 (16.6)	114 (15.3)	211 (15.9)	
What is plaque?								
A toothpaste	28 (4.6)	21 (2.9)	49 (3.7)	0.032*	24 (4.1)	25 (3.4)	49 (3.7)	0.002*
A layer of germs on the tooth [#]	232 (38)	353 (49)	585 (44)		240 (41.2)	364 (48.7)	604 (45.4)	
A plastic coating for teeth	16 (2.6)	21 (2.9)	37 (2.8)		11 (1.9)	19 (2.5)	30 (2.3)	
I don't know	334 (54.8)	325 (45.2)	659 (49.5)		308 (52.8)	339 (45.4)	647 (48.6)	
Plaque should be removed								
At least once a day [#]	325 (53.2)	422 (58.6)	747 (56.2)	0.351	294 (50.4)	403 (53.9)	697 (52.4)	0.154
Only by a dentist	199 (32.6)	220 (30.5)	419 (31.5)		201 (34.5)	219 (29.3)	420 (31.6)	
Never	03 (0.5)	01 (0.2)	04 (0.3)		04 (0.6)	02 (0.3)	06 (0.4)	
I don't know	83 (13.7)	77 (10.7)	160 (12)		84 (14.5)	123 (16.4)	207 (15.6)	
Dental plaque can lead to tooth decay								
Yes [#]	223 (36.6)	344 (47.8)	567 (42.6)	0.801	224 (38.4)	350 (46.9)	574 (43.2)	0.925
No	57 (9.3)	55 (7.6)	112 (8.4)		57 (9.8)	62 (8.3)	119 (8.9)	
I don't know	330 (54.1)	321 (44.6)	651 (48.9)		302 (51.8)	335 (44.8)	637 (47.9)	
Both (dental cavities and gum diseases) are preventable								
True [#]	216 (35.4)	300 (41.7)	516 (38.8)	0.502	212 (36.4)	317 (42.4)	529 (39.8)	0.984
False	394 (64.6)	420 (58.3)	814 (61.2)		371 (63.6)	430 (57.6)	801 (60.2)	
Do you think oral habits like mouth breathing, thumb sucking, lip biting has an influence on oral health?								
Yes [#]	263 (43.1)	445 (61.8)	708 (53.2)	0.046*	282 (48.4)	450 (60.2)	732 (55)	0.621
No	105 (17.2)	100 (13.9)	205 (15.4)		94 (16.1)	87 (11.6)	181 (13.6)	
I don't know	242 (39.7)	175 (24.3)	417 (31.4)		207 (35.5)	210 (28.2)	417 (31.4)	
Is it important to have a good set of aligned teeth?								
Yes [#]	425 (69.7)	550 (76.4)	975 (73.3)	0.327	415 (71.2)	567 (75.9)	982 (73.8)	0.204
No	91 (14.9)	115 (16)	206 (15.5)		59 (10.1)	61 (8.2)	120 (9)	
I don't know	94 (15.4)	55 (7.6)	149 (11.2)		109 (18.7)	119 (15.9)	228 (17.2)	
Does tobacco use cause oral cancer?								
Yes [#]	379 (62.1)	532 (73.9)	911 (68.5)	0.032*	381 (65.3)	546 (73.1)	927 (69.7)	0.215
No	79 (13)	82 (11.4)	161 (12.1)		85 (14.6)	79 (10.6)	164 (12.3)	
I don't know	152 (24.9)	106 (14.7)	258 (19.4)		117 (20.1)	122 (16.3)	239 (18)	

[#]Appropriate response; [@]More than one response; *Statistically significant (p<0.05).

Just 29% effectively responded to the inquiry concerning the indication of tooth decay; however, the majority (57.7%) felt toothache as a suitable reaction. A major proportion (95.3%) of the children perceived that sweets (chocolate/candies) could cause tooth decay, but this was statistically significant only among school type ($p < 0.05$). Notwithstanding, an enormous number of children didn't know about the cariogenic capability of soft drinks (60.6%) and sweetened milk (16.9%). On the contrary, 91% and 59.6% perceived consumption of cheese and nuts, respectively, as tooth friendly snack foods. Although about 29% of respondents had the option to effectively characterize a dental sealant, 33% addressed 'I don't have a clue'. Less than half (45%) of the children actually had heard about fluoride and only 36% correctly identified fluoride's action as preventing tooth decay. This was statistically significant among both gender and school type ($p < 0.05$). Nearly 55% of the children were not aware of any practice of receiving fluoride.

About 78% could recognize that blood on the toothbrush could be an indication of gum illness. Besides, 75% of the children perceived healthy gums do not bleed and accurately recognized that gum disease symptoms incorporate swelling, redness of gums, bad smell from the mouth, and bleeding from gums. This was statistically significant only with gender ($p < 0.05$). Approximately 70% knew that the ideal approach to keep up ideal gingival health was to clean their teeth every day, and 17% did not know the same. Nearly 50% were not aware about dental plaque and 43% could perceive that plaque can lead to tooth decay. This was significant among both gender and school type ($p < 0.05$). More than 60% were unaware that both dental caries and periodontal diseases were preventable through appropriate measures. Around 55% of the study population think that oral habits like mouth breathing, thumb sucking, and lip biting influence oral health. This was statistically significant among gender ($p < 0.05$). More than two-thirds (74%) appreciated the need to have a good set of aligned teeth. A similar percentage (70%) were aware that tobacco use causes oral cancer, which was a statistically significant gender wise.

Discussion

This investigation exhibited an exhaustive review and data about oral health information sources and the existing degree of oral health knowledge. Sample calculation and sampling procedures were enhanced to confirm that this study's results could be generalized to all 13–15-year-old adolescents in Bhubaneswar, subsequently limiting selection bias. The sample was adequately huge enough, including 24 different schools and drawn from an economically diverse area (both government and private schools) to make the study sample reasonable and representative.

In this investigation, the oral health information levels were impacted by sociodemographic factors, notably gender and kind of school. The outcomes are in accordance with past reports [17,25,26]. These distinctions in oral health information levels could result from the diverse educational level between the children [26,27]. The present investigation found that parents were the principal (60%) source of oral health information data for children; this is in concurrence with the findings of Woolfolk et al. [23] trailed by media (19%), dental specialists (14%), friends/relatives (5%) and teachers (3%). As youngsters invest the vast majority of their everyday energy with their parents, the ideal method to raise children's dental health awareness would be to furnish precise data to parents. There is a need, along these lines, to deliver appropriate oral health information to the parents. Our findings are as opposed to the investigation done in Nigeria [28], where most of the children recognized teachers as the most well-known source of oral health information.

Self-care offers a unique and compelling opportunity for dentistry, and its practitioners, to improve quality of care and overall health outcomes. For decades, the dominant treatment modalities within dentistry

primarily focused on a treatment-oriented approach as opposed to health promotion and improvement. However, new business and care models disrupt the dental care system and transform it into one that is focused on disease management and prevention-oriented primary care that considers overall health and well-being [29].

Generally, great oral health practice comprises of the usage of two comprehensively characterized sets of conduct, first; self-care propensities, for example, dental cleanliness, limitation of sugar items, and utilization of fluoride items, second; use of dental administrations, for example, customary dental visits, oral health education, and expertly applied preventive measures. Most of the children, nearly (90%) had agreeable comprehension of significance of good dental well-being and data about the functions of teeth, which is similar to other studies realized with Jordanian [18] and Pakistan [30] students. Notwithstanding, a significant number of children (11%) didn't know about all the functions of teeth. Proper information about the functions of teeth may probably improve dental consideration among these youngsters.

In contrast with Cheah et al. [31], few adolescents, 162 (12.2%), visited their dental specialist just when they had dental agony. This frame of mind could be explained as anxiety because of past negative dental visit understanding or guardians' carelessness. Roughly (30-40%) of the youngsters visited the dentist regularly at an interval of three to six months. This could be because of the low attention to the significance of routine dental visits for dental registration. This is as opposed to the youngsters in India (studies conducted in other parts) and China, where 71.6% and 73.6% respectively had a regular dental visit every 6 months [32,33]. In the literature, an accord has not been come to on the ideal periodicity for an oral assessment by a dental specialist; at the same time, in any event, one contact for every year is enthusiastically recommended.

Toothbrushes were the most ordinarily utilized oral cleanliness aids (94.9%); this is conversely with discoveries acquired among youngsters in Saudi Arabia and Kuwait [27,34]. Furthermore, almost a large portion of the children knew about brushing their teeth twice daily, and just (3.4%) settled on after every dinner, contrasted with 60.5% in Saudi Arabia and 58.3% in other studies reported in Indian population [32,35]. Lack of child oral health instruction programs in Bhubaneswar may clarify these findings. In Norway, Austria, Germany, Denmark, and Sweden, 73-83% of the children as youthful as 11-year-old brushed more regularly than once a day [36]. Those who brush their teeth more than once every day by 12 years old are bound to keep on doing as such all through their adolescent years and into adulthood [37]. Appropriate information about the recurrence of tooth brushing consistently will probably upgrade dental consideration among these children.

Proof has demonstrated that brushing alone isn't adequate in cleaning proximal surfaces of teeth. Therefore, dental floss utilization has been prescribed to help in anticipating both dental caries and periodontal disease [36]. In this investigation, around 57.4% of the children perceived dental floss as a cleaning gadget for between the teeth, which implies that the significance of cleaning between teeth was less surely known and younger students were ignorant that dental floss avoids dental ailments. This outcome shows that improvement in information toward dental floss utilization is required and is consistent with other studies [38].

The study population information about sweets (chocolates/candies) as a cariogenic diet was satisfactory (95.3%). Be that as it may, just (12%) of the youngster's considered sweetened milk as unsafe for dental well-being; requiring suitable direction around there. It was additionally found in this examination that not exactly 50% of the youngsters (44.7%) had really heard about fluoride and just (35.6%) accurately recognized that fluoride averts dental caries. Also, relatively few children (5.3%) perceived fluoridated water as

the most productive fluoride source. These outcomes are similar to the investigations done in different nations, for example, Saudi Arabia and Canada [11,25], and demonstrate the requirement for the teaching of children about the advantages of fluoride. Fluoride, particularly when given reliably in drinking water or dentifrice, provides more protection from dental caries that neutralizes the impacts of acids delivered from the bacterial digestion of dietary carbohydrates [39].

The students' knowledge of periodontal well-being was good as far as perceiving signs and manifestations of gum ailments (75%) and recognizing the ideal method for counteracting gum illnesses (70%). Although a few investigations have detailed inadmissible information on periodontal well-being among school children [31], the consequences of the present examination were concurrence with a few past investigations that demonstrated palatable information about periodontal health [23,31,35]. Almost half the study participants had the option to characterize plaque, and (43%) perceived that dental plaque could prompt tooth decay. The majority (60%) didn't know that dental caries and gum diseases can be prevented by following careful oral cleanliness measures. This finding proposes that knowledge concerning the destructive impacts of dental plaque ought to be raised.

Just over 50% of children were aware of the relationship between oral habits and oral health and surprisingly, one-third of the population did not know about such influences. Virtually (74%) felt the need to have a good compliment of teeth aligned properly and the remaining did not give any importance to teeth alignment. Almost a similar percentage (30%) of the children were not aware of tobacco's effect on oral cancer.

To achieve optimal oral health, services planned must include individuals and their social well-being at the center of decision-making. Medical care, genetics, and individual biology account for less than one-third of all determinants of health; this means that better overall health lies in addressing additional factors, including individual behavior, environmental and social circumstances of patients [40]. Therefore, context and lifestyle have significant roles in improving and maintaining optimal oral health. Self-care starts with learning the contextual elements surrounding and shaping a person's behavior, decisions, and health barriers. By investing in and strengthening existing health information technology platforms, we can begin to overcome some of the integral challenges that currently hinder widespread adoption of person-centered care models.




Despite its qualities and points of interest, this investigation has a few constraints. To start with, this examination is being assessed based on responses to the questionnaires and self-announced information. Estimation errors because of distortion of inquiries and memory mistakes are liable to happen. To conquer this issue, the inquiries were worded basically, and validation was performed. Besides, the researcher was constantly accessible during the survey, and the participants were urged to approach her at whatever point they required an explanation of any points. Second, in Bhubaneswar, children from higher financial status, for the most part, are probably going to be enrolled in private schools as opposed to children from lower financial backgrounds who attend mainly public schools. In this way, kind of school was utilized as an intermediary of financial backgrounds for the youngsters. Further investigations ought to be attempted to address progressively fitting proportions of financial class disparities in connection to oral health knowledge, for example, parental income and parental occupation.

Conclusion

A larger proportion of children displayed an absence of consciousness and the ideal method to prevent any health risks originating from poor oral health awareness and improve overall health and well-being. A person-centered care approach that integrates oral health into overall health must be critical in both care

design and delivery. The dental profession's intervention is needed to develop healthy lifestyles, such as healthy diets low in sugars, effective use of fluoride, and development of an oral health system that is oriented toward oral disease prevention and health promotion. A proper utilization of resources will result in better oral health knowledge and improved dental health in this growing population.

Authors' Contributions

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All authors declare that they contributed to critical review of intellectual content and approval of the final version to be published.

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Conflict of Interest

The authors declare no conflicts of interest.

Data Availability

The data used to support the findings of this study can be made available upon request to the corresponding author.

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