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Knowledge about Oral Hygiene among Adolescents in Sindhuli district

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Abstract

Oral health is one of the major public health problem as the burden of disease is increasing in low and middle income country. Studies shows that prevalence of dental caries and gum disease is high in case of Nepal and doctor patient ratio for oral hygiene is low despite the fact that oral hygiene is taken as one of the basic health care. In order to assess the status of knowledge about oral health and association between socio demographic factors and oral hygiene, the research study was carried out. A cross-sectional study was conducted among 268 adolescents studying in two public schools of Sindhuli district. Results shows that majority of adolescent believe on proper use of brushing and flossing leading to prevention from gum disease. Despite this believe, adolescents were found to be unaware about the time of changing brush. Some of the adolescents were found to deny vising dentist for oral checkup and some of them were unaware about the dental care practices. Overall, the knowledge about oral hygiene were found to be lower and there was no significant association between socio demographic characteristics and oral health.

Keywords: Adolescents, Knowledge, Oral Hygiene, Sindhuli

Introduction

Oral health is one of the well-being state of general health. This multi-dimensional term includes the potential of one to speak, touch, smile, smell, taste, swallow, chew and convey a series of emotions to another person through facial expression with ease i.e. without discomfort and pain Federation (FWD, 2020) As per the Global Burden of Disease Study 2017, 3.5 billion of the world's population was estimated to suffer from any kind of oral disease (Metrics GH, 2019). Nepal Health Sector Strategy (NHSS) possess Outcome 3 as provision of oral health services. So, oral health is a part of basic health care services (BHCS) package (Annual Report 2074/75, 2017). Second long-term plan (1997-2017) has considered oral health to be an emerging problem and put dental caries ahead among the dental health problems (Second Long Term Plan 1997-2017, 2017). From 2019, oral health is included in the Political Declaration on Universal Health Coverage (UHC) due to recognition of oral health as health burden for many countries as oral health is one of the contributing factors of Non-Communicable Disease (NCD). WHO is working to focus on strengthening primary health care focusing on patient and cost-effective population wide prevention by implementing three-year roadmap from 2019 to 2021 (Oral Health, 2020). The reasons for increasing case of oral disease in a developing country like Nepal are poverty and lack of education. Quality of life is degraded by untreated oral disease and poor oral health (Oral health in Nepal, 2020). As per WHO, oral health is an important part of general health as it is linked to NCD like diabetes, heart disease and stroke. Oral health is one of the major public health problem as the burden of disease is increasing in low and middle income country.

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The economic burden of this preventable disease is severe as more than US$ 140 billion per year is the expense to cure oral disease. (Academy of Dentistry International, 2018). In low income countries, the observed expenses for the treatment of dental caries per children is US $3513. In case of adult, the cost to treat oral disease is beyond most means. Quality of life is degraded due to dental caries as millions suffer from it (WHO, 2020). Oral health in all policies is required, awareness among politicians, health planners and even members of the public health committee is low. There is a need of research funding to study much on research for oral health and NCD. (FDI World Dental Federation, 2017). 10% of world population is affected by severe gum disease. In many low and middle income countries, people are not getting the dental treatment (WHO, 2020). As per National Oral Health Policy, 2070 the dentist patient ratio in Kathmandu is 1:9000 and outside the capital is 1:56,000 in 2073. The provision of high quality, effective, basic oral health care to all the people of Nepal is the primary aim of the policy and Health for All, the Declaration of Alma Ata and Ottawa Charter for the Health Promotion are the basis for the policy (National Health Policy, 2070). According to Annual Report 2066/67, the population to suffer from dental caries in Nepal was 3,92,831 and 73,309 suffered from gum disease. 62,747 suffered from other oral health related diseases where 3.08% visited Out Patient Department (OPD) for oral health problems. (DoHS, 2067)

A study argued that Oral hygiene is a important part of health still negligence in oral hygiene practice was observed in adolescents specially in boys, they were found to have poor oral hygiene. (Lehtinen AE; Joronen K; Simila T; Rentanen A; Virtanen JI; 2020). It was found that the adolescent in their study had taken dental treatment due to gingival bleeding, bad breath, decayed teeth (Maroneze MC; Ardenghi DM; Brondeni M; Unfer B, Ardenghi TM, 2019). The treatment was a delay due to their attitude, belief and perception to be dominated towards home remedies instead of dental treatment when they experienced toothache. A study conducted among adolescent in Peshawar Pakistan, concluded that knowledge of oral health among age group of 10 to 15 year old school going children was 71.1%. Positive attitude towards oral hygiene. (Shehzad S; Farroq A; Waheed Z; Maqsood F; Khan I; Kabir SK, 2019) The rationale of the study is to access the knowledge of oral hygiene among adolescents of Sindhuli. Nepalese population suffering from dental caries in Nepal was 3, 92,831 followed by 73,309 with gum disease. 62,747 suffered from other oral health related diseases where 3.08% visited Out Patient Department (OPD) for oral health problems in 2066/67 (DoHS, 2067). So, this research study will support in generating information about the association between knowledge about oral health and socio demographic factors and support WHO's three year roadmap. The objective of this study id to assess the knowledge of oral hygiene among adolescents in Sindhuli.

Methodology

Non experimental research was conducted where knowledge about oral hygiene among adolescents was observed and and analyzed; independent variables like age, sex and grade were not manipulated. (Bc Campus, 2023). Cross sectional study was selected on the basis of inclusion and exclusion criteria set for the study within a onetime specific time period (Setia M, 2016). The association between socio demographic characteristics and knowledge about oral hygiene among adolescents were measured to conduct analytical cross sectional study (Schmidt N.A; Brown J.M, 2019).

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There were different types of sampling methods like probability and non-probability sampling techniques. (Scribbr, 2023). For this study, probability sampling was applied and the participants were selected by applying principle of randomization. (Statistics Canada, 2023). The total population of adolescents in Sirthauli, Sindhuli was 753 as per the HMIS data 2076/77. By using the finite population formula 255 sample size was calculated turning to 281 adolescents after adding 10% of adolescents for pretesting. Randomly, a government school Dudhauli municipality was selected and adolescents studying in grade 8,9 and 10 were clustered as a sample for assessing their knowledge about oral hygiene leading to selection of mini-representation of the whole adolescents residing in Sindhuli. Total students of the school available at the school at the time of data collection were 242. Therefore, total sample size was 268 including the 26 adolescents surveyed for pretesting. The survey was conducted in two schools of Dudhauli municipality For the study, several literature review was done and semi structured questionnaire were designed for collecting the information. Questionnaires from prepared by reviewing pre-published articles (Gopikrishna V; Bhaskar NN; Kulkarni SB; Jacob J; Sourabha KG. 2016, Mulu W;Demilie T; Yimer M; Meshesha K; Abera B, 2014, Al-johani WA; Elanbya MG, 2019). The questionnaires were translated into local (Nepali) lanuage for convience and easy understanding of the adolescents studying in a government school. The tool was classifed into two categories (socio demographic characteristics and knowledge about oral hygiene) and prepared in a way to implicate the knowledge about oral hygiene, oral diseases of the adolescents. Total 15 questionnaires were prepared. The answers were numerically coded into 1 or 0. Pretesting among 26 government school students of Sindhuli district was done to ensure validation. An approval letter was provided by the concerned government school. An informed consent was prepared in local language depicting the voluntary participation, right to withdraw, commitment of confidentiality and utilization of the information of research purpose. The objectives of the study was clearly described to the students before proceeding the data collection and written consent was taken. Data compiling, editing, and checking was done both manually and computerized to maintain consistency. The manually collected data was entered in Statistical Package for Social Science (SPSS) version 16. Data coding, re-coding, rechecking, editing was performed within few days of collection. Data was imported into SPSS (version 16) for analysis. Quantitative analysis was done. All data was tabulated to analyze the data.

Results

Socio-demographic characteristics of respondents

The first section of the study depicts the descriptive socio-demographic characteristics of respondents and next section underlines the status of knowledge about oral hygiene among adolescents.

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Table 1 illustrates the socio-demographic characteristics of respondents regarding their age, grade and gender. The oral hygiene behaviors of the adolescents were judged by the use of flossing, tooth brush and knowledge about dental caries and toothache. Out of 286 respondents, majority of respondents belonged to age category of 14 to 16 years (80.1%) followed by 17 to 19 years (14.3%) and 10 to 13 years (5.6%). 35.7% of respondents were from grade 10 followed by 33.2% from grade 9 and 31.1% from grade 8.

Table 1: Distribution of respondents according to their age, grade, and gender

Characteristics (n=286)	**Frequency**	**Percentage**
Age Group		
10-13	16	5.6
14-16	229	80.1
17-19	41	14.3
Grade		
8	89	31.1
9	95	33.2
10	102	35.7
Gender		
Male	111	38.8
Female	175	61.2

Regarding the gender, number of female was found to be more dominating with 61.2% of the total adolescents. Majorly, adolescents within the age of 14 to 16 years participated in the study.

Knowledge about oral hygiene

Knowledge on frequency of tooth brushing

Table 2: Distribution of the respondents by knowledge on frequency of tooth brushing

Frequency of tooth brushing in a day	Number	Percentage
1 time	11	3.8
2 times	242	84.6
3 times	22	7.7
More than 3 times	9	3.1
Don't know	2	0.7

Table 2 depicts the distribution of the respondents regarding knowledge on frequency of tooth brushing. Majority of respondents i.e. 242 (84.6%) reported that teeth should be brushed 2 times a day. 9 respondents (3.1%) were unaware about frequency of tooth brushing.

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Knowledge on duration of brushing teeth

Table 3: Distribution of the respondents by knowledge on duration of brushing teeth

Duration of teeth brushing at a time	Number	Percentage
1 min	23	8.0
2 min	32	11.2
3 min	30	10.5
More than 3 min	196	68.5
Don't know	5	1.7

Table 3 shows that 196 respondents (68.5%) said that teeth should be brushed more than 3 minute at a time. 5 respondents (1.7%) did not know about the duration of tooth brushing at a time.

Knowledge on type of toothbrush for cleaning teeth

Table 4: Distribution of the respondents by knowledge on type of toothbrush for cleaning teeth

Type of toothbrush	Number	Percentage
Soft	215	75.2
Medium	64	22.4
Hard	5	1.7
Don't know	2	0.7

Table 4 depicts the distribution of knowledge regarding type of toothbrush need to be used. 215 respondents (75.2%) reported that soft brush should be used for brushing the teeth where 2 respondents (0.7%) were unaware about any types of toothbrush to be used.

Knowledge on time of changing toothbrush

Table 5: Distribution of the respondents by knowledge on time of changing toothbrush

Time of changing toothbrush	Number	Percentage
3 months	61	21.3
Less than 3 months	54	18.9
More than 3 months	47	16.4
Don't know	124	43.4

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Table 5 depicts the distribution of the respondents regarding knowledge on frequency of changing tooth-brush. It is interesting that 124 respondents (43.4%) did not know about the time of changing tooth brush whereas 61 respondents (21.3%) reported that brush should be changed at 3 months.

Knowledge on frequency of dental visit

Table 6: Distribution of the respondents by knowledge on frequency of dental visit

Frequency of dental visit in a year	Number	Percentage
2 times	45	15.7
Don't know	47	16.4
Less than 2 times	16	5.6
More than 2 times	128	44.8
Need based	3	1.0
No need	47	16.4

Table 6 depicts the distribution of respondents regarding frequency of dental visit. 128 respondents (44.8%) reported that one should visit dentist more than 2 times in a year. 47 respondents (16.4%) said that there is no need of dental visit and 3 respondents (1%) said that dentist should be visited as per the need.

Information about oral hygiene among adolescents

Table 7: Distribution of information about oral hygiene among adolescents

Information about oral hygiene (n=286)	Yes		No		Don't know	
	N	%	N	%	N	%
Dental caries affect dental appearance and aesthetics	274	95.8	12	4.2	0	0
Treatment of toothache as important as other parts of body	275	96.2	10	3.5	1	0.3
Bad oral health impact the health of the body	273	95.8	13	4.5	0	0
Dental plaque leads to dental caries	273	95.5	13	4.5	0	0
Regular use of toothache and toothpaste provides a healthy mouth and reduce gingivitis	280	97.9	5	1.7	1	0.3
Flossing method is needed to get optimal cleaning of the teeth	260	90.9	25	8.7	1	0.3
Sweets and soft drinks affect teeth adversely	284	99.3	2	0.7	0	0

95.8% of adolescents responded that dental carries affect dental appearance (Table 7). 99.3% of adolescents are confident that sweets and soft drinks adversely affects the teeth. 96.2% adolescents believe that treatment of toothache is important as other parts of the body.

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Knowledge about gum disease

Table 8: Distribution of the respondents by knowledge about gum disease

Gum disease	Number	Percentage
Bad breath	29	10.1
Painful chewing	46	16.1
Gums that bleeds easily	72	25.2
All of the above	139	48.6

Table 8 shows that 139 respondents (48.6%) said that gum disease is bad breath, painful chewing and gums that bleeds easily.

Knowledge about gum disease prevention

Table 9: Distribution of the respondents by knowledge about gum disease prevention

Methods to prevent gum disease	Number	Percentage
Brushing and flossing	234	81.8
Consuming soft food	4	1.4
Consuming Vitamin-C	37	12.9
Don't know	11	3.8

Table 9 depicts the distribution of the respondents by knowledge about gum disease prevention. 234 respondents (81.8%) said that brushing and flossing are the methods to prevent gum disease followed by 37 (12.9%) and 4 (1.4%) stating consumption of Vitamin-C and soft food respectively. 11 respondents (3.8%) did not know about any method to prevent gum disease.

Relationship of sociodemographic characteristics with oral hygiene

Table 10: Association of age, grade and gender with oral hygiene

Variables	High n(%)	Low n(%)	p-value
Age group			
10-13	10(62.5)	6(37.5)	0.087
14-16	82(35.8)	147(64.2)	
17-19	13(31.7)	28(68.3)	
Grade			
8	36(40.4)	53(59.6)	0.595
9	35(36.8)	60(63.2)	
10	34(33.3)	68(66.7)	
Gender			
Male	41(36.9)	70(63.1)	0.950
Female	64(36.6)	111(63.4)	

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Table 10 depicts the association of knowledge of oral health with age, grade and gender. There is no association of knowledge with age, grade and gender.

Knowledge level of oral hygiene among adolescents

Table 11: Knowledge of oral hygiene

Knowledge	Number	Percentage
Low	183	64.0
Average	62	21.7
High	41	14.3

Table 11 shows that 181 (64%) had low knowledge about oral health. 62 respondents (21.7%) had average knowledge score. 41 respondents (14.3%) had high knowledge score.

Discussion

Primarily, knowledge on oral hygiene among the adolescents studying in government school of Sindhuli have been conducted. Overall, finding of the study demonstrates low level of knowledge among adolescents (64%) generates an additional need of awareness about oral hygiene in education curriculum. Similarly, the study found that age is one of the significant factor determining the knowledge about oral hygiene. (p-value 0.087). A study conducted in Rural Area of Bangladesh among primary level students (Karim F, 2015) showed that 60.52% responded to clean teeth once, 08.78% twice and 30.7% did not know about the frequency of cleaning teeth in a day. A study carried in South India among secondary and higher secondary students found that 47% responded to clean teeth once, 52% twice (Kuppuswamy VL; Murthy S; Sharma S; Surapaneni KM; Grover A; Joshi A, 2014). This study shows that majority of respondents i.e. 242 (84.6%) reported that teeth should be brushed 2 times a day which is greater than study in Bangladesh and South India. (28,29) 9 respondents (3.1%) were unaware about frequency of tooth brushing which is less than study of Bangladesh (Karim F, 2015).

A study carried in Himachal Pradesh, India among school going children (Pathania V; V S; BC K; Jaj H.S AM; Sharma AK, 2014), found that 18.1% respondents reported to visit a dentist once followed by 2 times (61%) and 3 times (13.1%) in a year. A study done in Pupils in Ibadan, Nigeria among pupils found that 30.6% respondents stating to visit a dentist once, twice by 75.6% of respondents and 3.8% did not know about frequency of dental visit in a year. A study carried in South India among secondary and higher secondary students found that 4% respondents reported to visit a dentist regularly, 46% as per need, 50% did not know about frequency of dental visit in a year (Kuppuswamy VL; Murthy S; Sharma S; Surapaneni KM; Grover A; Joshi A, 2014). This study shows that 128 respondents (44.8%) reported that one should visit dentist more than 2 times in a year which is less than study in Himachal Pradesh, India and Nigeria. (30,31) 47 respondents (16.4%) said that there is no need of dental visit and 3 respondents (1%) said that dentist should be visited as per the need which is less than study of South India. (Kuppuswamy VL; Murthy S; Sharma S; Surapaneni KM; Grover A; Joshi A, 2014).

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A study carried in Kuching among secondary level students found that 88.5% knew that dental caries affect dental appearance and aesthetics whereas 11.5% did not know about it. 69.4% reported that sweets and soft drinks affect teeth adversely (Lian; C. W.; Phing; T. S.; Chat, C. S.; Shin; B. C.; Baharuddin; L. H.; Che'Jalil; Z. B. J, 2010). 30.4% were unaware about the effect of sweets and soft drinks in the teeth. A study in North East Delhi among school going children (Kumar D; Kalra N; Tyagi R; Khatri A; Khandelwal D; Kumar S, 2018) found that 76.57% knew that dental caries affect dental appearance and aesthetics whereas 21.71% did not know about it. This study found that 274 respondents (95.8%) responded that dental caries affect dental appearance and aesthetics which is greater than study in Kuching and North East Delhi (32,33) whereas 12 respondents (4.2%) denied it which is less than study in Kuching (Lian; C. W.; Phing; T. S.; Chat, C. S.; Shin; B. C.; Baharuddin; L. H.; Che'Jalil; Z. B. J, 2010).

A study done carried in Chitwan among Chepang primary schools (Prasai Dixit L;Shakya A; Shrestha M;Shrestha A, 2013) found that 76% responding the treatment of toothache as important as any organ in the body. A study done in Riyadh among adolescents found that 65.9% responded that the treatment of toothache as important as any organ in the body whereas 9.4% reported that treatment of toothache is not as important as any organ in the body. 24.7% of respondents were unaware about it (Al Subait AA; Alousaimi M; Geeverghese A; Ali A;El Metwally A., 2016). The prevalence of high dental anxiety was 8.1% in Nepal (Dhungana et al., 2023). A study carried in Davangere among school children found that all student stating oral health to be as important as general health (Vishwanathaiah S.,2016). This study found that 275 respondents (96.2%) responded that treatment of toothache is as important as other part of the body which is greater than study of Chitwan, Rural Nepal, Riyadh and less than study of Advancer Prasai (Dixit L;Shakya A; Shrestha M;Shrestha).

Conclusion

Tooth brush is the one of the common aid used for oral hygiene and majority of adolescent believed that proper use of brushing and flossing prevents from gum disease. Despite this believe, adolescents were found to be unaware about the time of changing brush. Some of the adolescents were found to deny vising dentist for oral checkup and some of them were found to be unaware about the dental care practices. Majority of adolescents possess low knowledge about oral hygiene. There was no association between sociodemographic characteristics and knowledge about oral hygiene. Education with practical sessions on flossing, correct techniques of brushing, dental visits, prevention from gum disease and dental caries should be focused and included within school curriculum. In this way, the prevalence of doctor patient ratio to treat oral health diseases will be balanced.

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