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Original Research Article

Effectiveness of structured teaching programme on knowledge and practices regarding oral hygiene among middle school children at Udaipur

Harish K. Kumawat, Ashok Kumar, Dev Narayan*, Dinesh K. Sharma, Sanjay Nagda, Vivek Choubisa

Tirupati College of Nursing, Pacific Medical University, Udaipur, Rajasthan, India

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***Correspondence:**
Mr. Dev Narayan,
E-mail: eternal.dev06@gmail.com

ABSTRACT

Background: The vision of the Indian dental association is to improve oral health and achieving optimal national oral health for all. So, the present study was aimed to improve the knowledge and practice regarding oral hygiene using STP (structured teaching programme) among selected middle school children at Udaipur.
Methods: Evaluative research approach and pre-experimental, one-group pre-test, post-test designs were adopted for this study. Using a non-probability, convenient sampling technique, sixty children were recruited from the sixth and seventh standards of selected middle schools at Udaipur city. Tools included demographic data, a self-structured knowledge questionnaire and an observational checklist. Data were analyzed using descriptive and inferential values by IBM statistical package for social sciences (SPSS version 23) software.
Results: Data revealed that there was a lack of knowledge and practice (tooth brushing technique) on oral hygiene among middle school children which can be increased by administering STP on oral hygiene. The mean and standard deviation of post-test knowledge score and practice score 15.73±1.19 and 8.41±1.66 was higher than the mean and standard deviation of pre-test knowledge score and practice score 5.11±1.14 and 4.27±179 respectively.
Conclusions: Greater attention to STP on oral hygiene is needed to improve knowledge and practice (tooth brushing technique) regarding oral hygiene among middle school children.

Keywords: Knowledge, Oral hygiene, Middle school children, Practice, Structured teaching programme

INTRODUCTION

The poor oral health of people negatively affects the growth, development, learning, nutrition, communication, and self-esteem.[1] The oral health is a key indicator of the people for overall health, well-being and even quality of life and it encompasses dental caries, gum disease, tooth loss and oral cancer.[2] In 2017, the global burden of disease study estimated that oral diseases influenced 3.5 billion people worldwide.[2] The international agency for research on cancer mentioned that cancers of the lip and oral cavity are among the top 15 most common cancers worldwide, with nearly 180000 deaths each year.[2]

Usually, dental hygiene refers to the practice of keeping the mouth, teeth and gums clean and healthy to prevent diseases.[3] People often take for granted oral hygiene and oral health but are essential parts of our day-to-day life.[3] Oral health has a significant effect on general health and oral infection is capable of causing major health complications.[4]

It was revealed that out of 2200 school children aged 12-14 years from 16 schools of different areas, only 25.8% of children reported a good knowledge of oral health and tooth brushing was observed by only 3.7 percentage of children. About 44.6% of children recognized dental floss as a cleaning device for between the teeth.[5]

Health education services at school on oral hygiene practices to be conducted at regular intervals.[6] Inappropriate measures in dental hygiene contribute to the transmission of COVID-19 between cohabitants indirectly.[7] Half of the students brushed their teeth twice daily.[8] Programs for oral health promotion are required to improve knowledge and practices regarding oral hygiene among pupils.[9]

METHODS

An evaluative research approach was used in the present study. Ethical approval was obtained from the institutional ethics committee vide letter number TCN/UDR/2019-20-111 dated 3 January 2020. The purpose of the study was informed to all the study participants and data were anonymized by personal identification details. Informed written consent was taken from each participant.

Study design

Our study used pre-experimental, one-group pre-test and post-test designs to assess the effectiveness of STP on knowledge and practices (tooth brushing technique) of oral hygiene among middle school children. Baseline data were collected before and after STP on oral hygiene in 2020. The study conducted two data collection exercises: interviews with middle school children and observation of the practices of middle school children on oral hygiene by the researcher.

Study setting

The four conveniently selected middle schools constituted both male and female children of sixth and seventh standard. All four of the middle school were rural at Udaipur city. Sixty children have participated.

Development of the tool

The content validity of the self-structured knowledge questionnaire, observational checklist for oral hygiene practices (tooth brushing technique) and STP on oral hygiene was determined by sending them to the panel of experts. After seeking their valuable comments and suggestions, tools were modified. The test-retest method was used for the reliability of the data. Their correlation was checked by the Karl-Pearson correlation coefficient (r=0.79). The tools were found reliable.

Data collection procedures

Children's interview

All children who were willing to participate were eligible for inclusion in the interview for knowledge assessment on oral hygiene. The researcher approached all children of four middle schools, described the study and its interview process, emphasizing its privacy and confidentiality and their consent to participate was requested, utilizing a structured consent form in the children's preferred language as Hindi. Children were recruited until the necessary sample sizes were reached for all four middle schools. In 2020 a total sixty children consented to participate. Interviews were conducted at a specially designated classroom of each school by interviewers trained in the study procedures to ensure that children's privacy was maintained. The questionnaires examine children's demographic and household characteristics including their socio-economic status and twenty self-structured knowledge items. The pre-test questionnaire was given to the respondents and demographic data and knowledge of oral hygiene were assessed. The next day STP was given regarding knowledge and practices (tooth brushing technique) of oral hygiene. After seven days the investigator administered a post-test on knowledge questionnaire of oral hygiene. A laptop was used to record demographic and knowledge-based data in MS excel, after that MS excel, database was exported to SPSS 23 licensed version for data analysis and interpretation.

Observation of children's practice for oral hygiene

All children who were willing to participate were eligible for inclusion in the observation of the children regarding oral hygiene practices. The researcher approached houses of all same sixty children of four middle schools, described the study and its process, emphasizing its privacy and confidentiality and their consent to participate was requested, utilizing a structured consent form in the children's preferred language as Hindi. Trained researchers to conduct the observations with observation checklist with ten items, observed the same sixty children's before and after seven days of administration STP on oral hygiene practices (tooth brushing technique). The laptop was used to collect data regarding oral hygiene practices as per observation in MS excel, that MS excel database was exported to SPSS 23 licensed version for data analysis and interpretation.

We performed a Chi-square and a t test to compare the baseline data of the participants. Data before and after administration of STP among participants, self-efficacy were compared by using t test. We set the statistical significance level at $p<0.05$ and a 95% confidence interval.

RESULTS

In the present study, sixty students at middle school have participated. The distribution of demographic variables reveals that a maximum number of middle school children 42 (70%) were in the age group of 9-10 years and remaining 18 (30%) were in the age group of 11-12 years. The majority of children 41 (68.33%) were male and the remaining 19 (31.67%) were female. Most of the children 52 (86.67%) were Hindus and the remaining 8 (13.33%) were Muslims. Only 15 (25%) were having one sibling, 36 (60%) participants having two siblings, 8 (13.33%) were not having siblings and 1 (1.67%) were having more than two siblings. The majority of children 40 (66.67%) belong to a joint family and the remaining 20 (33.33%) belong to a nuclear family. Very few children's 5 (8.33%) were having family income per month ₹ >5000 per month and some children 23 (38.33%) were having family income in between ₹5000-10,000 per month, most of children 25 (41.67%) were having in between ₹10000-15,000 per month and the remaining 7 (11.67%) were having more than ₹15,000 per month. Some of the middle school children 12 (20%) received information from teachers, only a few children 5 (8.33%) received information from television and, majority of children 27 (45%) received information from newspaper and remaining children 16 (26.67%) received information from elders (Table 1).

In the pre-test knowledge score, most of the respondents 81.66% had inadequate knowledge scores, some respondents 13.33% had moderate knowledge and few respondents 5% had adequate knowledge. While in the post-test knowledge score, none of the respondents 0% had inadequate knowledge score, few respondents 15% had moderate knowledge score and most of the respondents 85% had adequate knowledge (Figure 1).

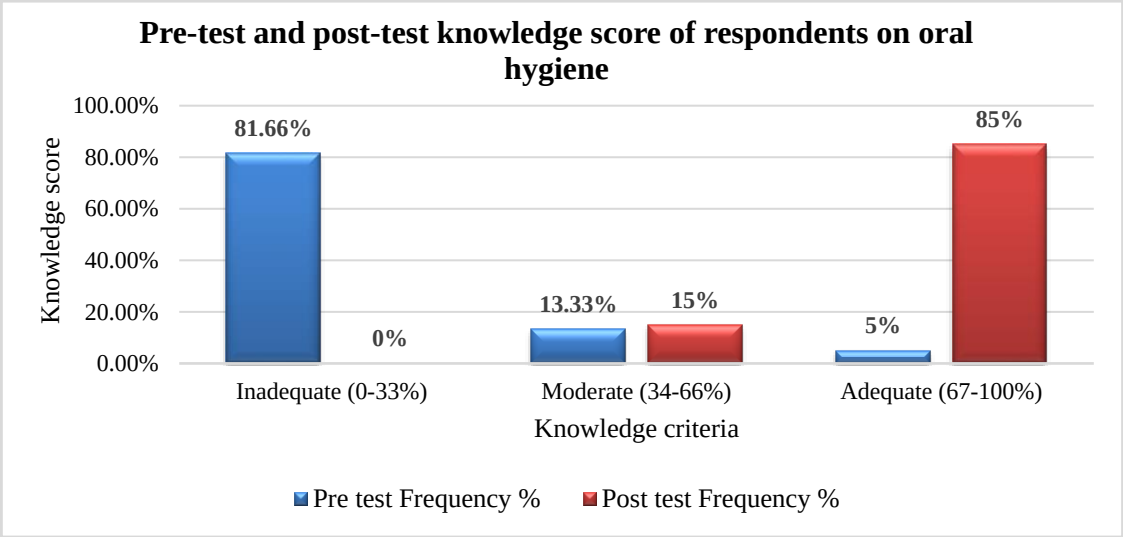

Figure 1: Comparison of knowledge score of respondents on oral hygiene.

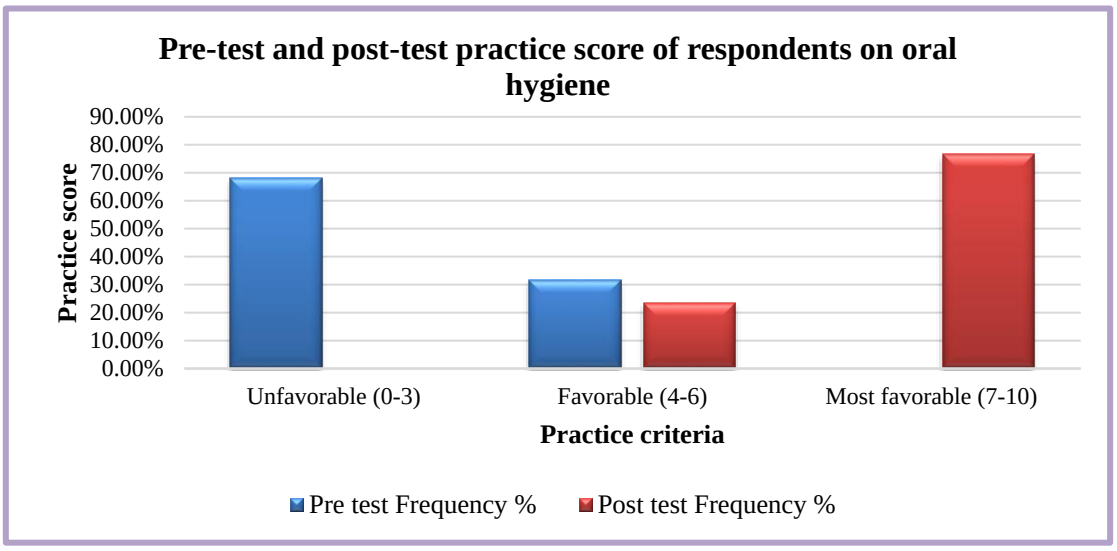

Figure 2: Comparison of practice score of respondents on oral hygiene.

Table 1: Demographic profile of participants (n=60).

S. no.	Characteristics	Frequency	Percentage (%)
	Age of children (in years)		
1	9-10	42	70.00
	11-12	18	30.00
	Gender		
2	Male	41	68.33
	Female	19	31.67
	Religion		
	Hindu	52	86.66
3	Muslim	8	13.33
	Christian	0	0.00
	Others	0	0.00
	Number of siblings		
	Nil	15	25.00
4	One	36	60.00
	Two	8	13.33
	More than two	1	1.67
	Type of family		
5	Joint	40	66.67
	Nuclear	20	33.33
	Family income		
	<5000 ₹	5	8.33
6	5000-10,000 ₹	23	38.33
	10,000-15000 ₹	25	41.67
	>15,000 ₹	7	11.67
	Source of information		
	Television	12	20.00
7	Newspaper	5	8.33
	Teacher	27	45.00
	Elders	16	26.67

Table 2: Effectiveness of STP regarding knowledge and practices of oral hygiene.

Areas	Mean±SD (N=60)	Paired t test
Knowledge		
Pre-test	5.11±1.14	0.12
Post test	15.73±1.19	
Practice		
Pre-test	4.27±179	0.09
Post test	8.41±1.66	

Note: significant at p value ≤0.05.

Table 3: Correlation between the knowledge and practice.

Variables	Correlation value	Statistical value
Post-test knowledge and practice scores	r=0.07	Positive correlation

Table 4: Association between selected demographic variables and pre-test knowledge score.

Demographic variables	Frequency	Knowledge (n=60)			d.f.	Table value	P value
		Inadequate	Moderate	Adequate			
Age (in years)							
9-10	42	34	6	2	2	5.99	0.49 NS
11-12	18	15	2	1			
Gender							
Male	41	33	7	1	2	5.99	0.62 NS
Female	19	16	1	2			
Religion							
Hindu	52	44	5	3	6	12.6	5.92 NS
Muslim	8	5	3	0			
Christian	0	0	0	0			
Others	0	0	0	0			
Number of siblings							
Nil	15	12	2	1	6	12.6	4.65 NS
One	36	31	4	1			
Two	8	5	2	1			
More than two	1	1	0	0			
Family type							
Joint	40	35	4	1	2	5.99	1.07 NS
Nuclear	20	14	4	2			
Family income (monthly)							
<5000 ₹	5	3	1	1	6	12.6	2.41 NS
5000-10,000 ₹	23	20	3	0			
10,000-15,000 ₹	25	22	2	1			
>15,000 ₹	7	4	2	1			
Source of information							
Television	12	9	3	0	6	12.6	2.95 NS
Newspaper	5	2	2	1			
Teacher	27	23	2	2			
Elders	16	15	1	0			

NS-no significant.

Table 5: Association between selected demographic variables and pre-test practice score.

Demographic variables	Frequency	Practice (n=60)			d.f.	Table value	P value
		Unfavourable	Favourable	Most favourable			
Age (in years)							
9-10	42	34	8	0	2	5.99	0.34 NS
11-12	18	7	11	0			
Gender							
Male	41	31	10	0	2	5.99	5.86 NS
Female	19	10	9	0			
Religion							
Hindu	52	37	15	0	6	12.6	9.32 NS
Muslim	8	4	4	0			
Christian	0	0	0	0			
Others	0	0	0	0			
Number of siblings							
Nil	15	11	4	0	6	12.6	7.69 NS
One	36	28	8	0			
Two	8	1	7	0			

Continued.

Demographic variables	Frequency	Practice (n=60)			d.f.	Table value	
		Unfavourable	Favourable	Most favourable			
More than two	1	1	0	0			
Family type							
Joint	40	28	12	0	2	5.99	0. 14 NS
Nuclear	20	13	7	0			
Family income (monthly)							
<5000 ₹	5	3	2	0	6	12.6	22.41 sig
5000-10,000 ₹	23	12	11	0			
10,000-15,000 ₹	25	21	4	0			
>15,000 ₹	7	5	2	0			
Source of information							
Television	12	14	5	0	6	12.06	7.94 NS
Newspaper	5	4	1	0			
Teacher	27	20	7	0			
Elders	16	10	6	0			

NS-no significant; sig-significant.

In pre-test practice score, most of the respondents 68.33% had poor practice score and some of the respondents 31.66% had fair practice score and none of the respondents 0% had a good practice score. In the post-test practice score, none of the respondents 0% had a poor practice score, few respondents 23.33% had a fair practice score and the majority 76.66% had a good practice score (Figure 2).

The mean post-test knowledge score of 15.73 was higher than the mean pre-test knowledge score of 5.11. The calculated t value of 0.12 ($p \leq 0.05$) showed that there is a significant difference between the pre-test and post-test knowledge scores. The mean post-test practice score of 8.41 was higher than the mean pre-test practice score of 4.27. The calculated t value of 0.09 ($p \leq 0.05$) showed that there was a significant difference between the pre-test and post-test mean practice scores (Table 2).

The correlation value (r=0.07) represents the positive relationship between post-test knowledge and practice score (Table 3).

There is no association between knowledge and selected demographic variables like age, gender, number of siblings, type of family, family income and source of information (Table 4).

There is no association between practices and selected demographic variables like age, gender, number of siblings, type of family, family income and source of information (Table 5).

DISCUSSION

In the present study, we assessed the self-developed interventional tool STP on knowledge and practice of oral hygiene. The STP on oral hygiene helps to increase the knowledge and practice of oral hygiene among middle school children.

Cavities are the most common chronic diseases of childhood in the United States and if left untreated then it can cause pain and infections that may further lead to problems with eating, speaking, playing and learning.[10] Due to these children often miss more school and may score less than children who do not have cavities.[10] Cavities are preventable as fluoride varnish can prevent about one-third (33%) of cavities in the primary teeth.[11]

The present study showed an increase in knowledge and practice among middle school children. Reviewing the literature, we retrieved an article on the oral health knowledge and oral hygiene practices among primary school children age 5-17 years in a rural area of Uasin Gishu district, Kenya concluded that less than half of the students knew the causes of tooth decay and how to prevent it.[12] One more similar study on knowledge, attitudes and oral health practices of school children in Davangere revealed that comprehensive oral health education programs for children are required to achieve the goal of oral hygiene.[13]

However, it was identified that the overall knowledge score and practice score of the respondents after administration of STP on oral hygiene was significantly increased compared with the scores of a pre-test. These results support that STP on oral hygiene was effective in improving knowledge and practice of oral hygiene among middle school children. The results of the present study are in the loop with other findings by Abel et al in which they presented that there was an improvement in oral health knowledge and practices among participants who received awareness programs on oral hygiene.[9] Furthermore, our results are also consistent with the

findings of Bizuayehu et al findings as suggesting that awareness of the importance of oral hygiene needs to be enhanced on a regular education basis.[14] Other than this the finding of the study from Sharmila et al also revealed that health education services at school regarding oral hygiene practices targeting the children.[6] A similar study from Ashok et al also showed that the knowledge and practice about oral hygiene among school children were not satisfactory and need to improved significantly by community-based health promotion program for oral hygiene.[15]

The present study showed that there is no association between knowledge and practice with selected demographic variables like age, gender, number of siblings, type of family, family income and source of information. While a similar study from Gitumoni et al finding reveals that there is a significant association between knowledge and practice with selected demographic variables like age, gender, religion, family size, socioeconomic status except resident.[16]

The present study showed that the co-relation between post-test knowledge and practice score (r=0.07) regarding oral hygiene among middle school children, which represents that there is a positive relationship between post-test knowledge and post-test practice score. Reviewing the literature, we did not retrieve any related article on the co-relation between post-test knowledge and practice score regarding oral hygiene among middle school children.

The present study had a few limitations which were required to be considered like participants were recruited conveniently and those who were willing to participate in the study.

CONCLUSION

The present study revealed that there was a major increase in knowledge score and practice score in post-test after administering the STP regarding oral hygiene among middle school children. So, the STP is an effective interventional tool to increase knowledge and practice regarding oral hygiene among middle school children. STP on oral hygiene must be administered to middle school children on a regular education basis.

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Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Indian Dental Association. Fact sheet: About IDA. Available at: https://ida.org.in/AboutUs/Details/AboutIDA. Accessed on 2 May 2021.
2. WHO. Fact sheet: Oral Health, 2021. Available at: https://www.who.int/health-topics/oral-health/#tab=tab_1. Accessed on 2 May 2021.
3. Centres for Disease Control and Prevention. Fact sheet: Dental Hygiene, 2016. Available at: https://www.cdc.gov/healthywater/hygiene/dental/index.html. Accessed on 2 May 2021.
4. National Health Portal. Fact sheet: Oral Health, 2015. Available at: https://www.nhp.gov.in/healthly living/oral-health. Accessed on 2 May 2021.
5. Al-Darwish MS. Oral health knowledge, behaviour and practices among school children in Qatar. Res J (Isfahan). 2016;13(4):342-53.
6. Sharmila MJK, Umadevi R, Eashwar VMA. Knowledge, attitude and practice on oral hygiene among primary school children in an urban area of Kancheepuram district, Tamil Nadu. Int J Commun Med Pub Health. 2020;7(1):311.
7. González-Olmo MJ, Delgado-Ramos B, Ruiz-Guillén A, Romero-Maroto M, Carrillo-Díaz M. Oral hygiene habits and possible transmission of COVID-19 among cohabitants. BMC Oral Health. 2020;20(1):286.
8. Okemwa KA, Gatongi PM, Rotich JK. The oral health knowledge and oral hygiene practices among primary school children aged 5-17 years in a rural area of Uasin Gishu district, Kenya. East Afr J Public Health. 2010;7(2):187-90.
9. Hamoonga A, Anthony SN, Siziya S. Knowledge, attitudes and practices on oral hygiene among 12 years old school children in Luanshya, Zambia. Tanzania Dent J. 2015;19(1).
10. Centers for Disease Control and Prevention. Fact sheet: Children's Oral Health, 2021. Available at https://www.cdc.gov/oralhealth/basics/childrens-oral-health/index.html. Accessed on 2 May 2021.
11. Marinho VCC, Worthington HV, Walsh T, Clarkson JE. Fluoride varnishes for preventing dental caries in children and adolescents. Cochr Database Systemat Rev. 2013;7:002279.
12. Okemwa KA, Gatongi PM, Rotich JK. The oral health knowledge and oral hygiene practices among primary school children aged 5-17 years in a rural area of Uasin Gishu district, Kenya. East Afr J Public Health. 2010;7(2):180-90.
13. Satish V. Knowledge, attitudes, and oral health practices of school children in Davangere. Int J Clin Pediatr Dent. 2016;9(2):172-6.
14. Abate B, Ephrem M, Gebremariam M, Ayalew Y, Shimels T. Knowledge, attitude, and practices toward oral hygiene among students of medhanealem high school, addis ababa, Ethiopia. J Dent Res Rev. 2020;7(2):42-9.
15. Ashok VG, Krishnaprasad C. A study on oral hygiene among school children in a rural area of Tamil Nadu. Int J Contemp Med Res. 2016;3(9):2798-9.
16. Konwar G, Borah A, Angeline. A descriptive study to assess the knowledge of oral hygiene among

middle school students in selected school of Ranchi, Jharkhand. IP J Paediatr Nurs Sci. 2019;2(1):8-12.
Mudgal SK, Sharma SK, Chaturvedi J, Chundawat DS. Effects of health promotion model-based visual learning module on self-efficacy and health promotion behavior of stroke survivors: a nonrandomized controlled trial. J Neurosci Rural Pract. 2021;12(2):389-97.

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