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ORIGINAL ARTICLE

Evaluation of Oral Health Awareness among School Children – A Novel snake and ladder game-based study

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ABSTRACT

*Among school-going children, oral diseases like gingivitis is becoming more prevalent and there is inadequate information regarding the awareness among them. The aim of this study is to assess the effectiveness of snake and ladder game on the level of knowledge, behaviour -and practice towards oral hygiene maintenance among school children from a selected school in Tirunelveli district. A total of 50 school children aged 11-14 years were approached from a private school in Tirunelveli district. After obtaining consent from school administration as well as parents/guardians of children, they were asked to participate in the snake and ladder game which incorporates the importance of oral hygiene. School children who were participating study were asked to answer a questionnaire before and after game. The information about oral health knowledge and practices was obtained through this self-administered questionnaire. Completely answered questionnaire was collected. Data analysis was performed. The response rate from school children was 100%. A statistically significant difference ( $p < 0.005$ ) was found among the participants before and after the game. The findings from present study showed that the snake and ladder game was effective in improving the knowledge of children towards oral hygiene. Oral hygiene is essential for every individual and games were the most effective and simple way in educating the children.*

*Keywords: Oral Health, School children, level of knowledge, behaviour -and practice*

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**INTRODUCTION**

Oral health is the essential component of overall health and wellbeing. If it is not maintained, it affect numerous aspect of a child's health status from the ability to eat and speak to quality of life including self-esteem, learning, social relationship and levels of usual activity. [1] Many children facing common dental problems like tooth decay, yellow teeth, bad smelling mouth, gum swelling and gum diseases like gingivitis. According to various researches, one of the characteristics is having a poorer economic background. [2] They have made an effort to link these discrepancies to the absence of knowledge on fundamental oral health care, particularly at the school level. [3] Since middle school students' dentitions and cognitive development are both at a transitional stage, their degree of oral health awareness might be quite important. Knowing how much people know about oral health can assist oral health organizations create a policy to avoid dental issues at their earliest stages. Gaming is an educational strategy that facilitates and reinforce child learning in a stimulating and dynamic format. Since snake and ladder game insist about both good and bad aspects, it is easy to make school children to understand the practice which they should follow and resist. This cross-sectional research was done in a middle school in Tirunelveli District, to assess the effectiveness of snake and ladder game on the level of knowledge regarding oral hygiene.

**MATERIAL AND METHODS**

A questionnaire was used to perform the cross-sectional investigation. The questions were designed to elicit information regarding dental health from the single middle school students. A snake and ladder game board was designed which incorporated the importance of oral hygiene practice. The students were

asked to answer the questionnaire before and after the snake and ladder game. The study was approved after being evaluated by the institutional ethics committee. After explaining the study's goals and the steps that would be taken to carry them out to the principal of upper primary schools, the school administration gave its approval. The data collection day was scheduled, and the principal was asked to educate the children and their parents about the project. The information was gathered using a questionnaire that asked participants about their perceptions of their personal oral health condition, attitudes toward oral health care, and aspects of oral disease prevention.

### **Study population**

The population for the study consists of 50 school children between 11-14 years of age from a private school in Tirunelveli district, Tamil Nadu.

#### **Study design**

This study is a before and after comparative study.

#### **Study setting**

In the middle school students, a cross-sectional study using questionnaires was carried out. A total of 50 children between the ages of 11 and 14 were invited to participate in the study. Parents and school instructors were present when the consent was sought. Questions on perception and understanding of oral health care were included in both English-language and local language questionnaire. The information collected was thoroughly tallied and examined once the questionnaires were distributed and filled out before and after the snake and ladder game.

#### **Inclusion criteria**

- Children's between 11 and 14 years
- Can read and write English language
- Consented to participated.

#### **Exclusion criteria**

- Not able to read and write English language
- Unwilling to consent.

#### **Date collection**

50 school children who were requested to participate have completed and returned the forms before and after playing the snake and ladder game. After being verified as accurate, the data were uploaded to a data sheet.

### **STATISTICAL ANALYSIS**

Statistical analysis was performed using sign test and p value  $<0.05$  was found to be statistically significant.

### **RESULTS**

100% of respondents responded. 14 men and 36 women made up the research sample. The mean age of the participants was 13.5 years.

#### **ORAL HEALTH PERCEPTION AND KNOWLEDGE**

Before snake and ladder game 20% children were unaware of maintaining regular oral hygiene, after game a statistically significant difference  $p < 0.001$  was found. Before study only 40% of children were aware of proper tooth brushing and tongue cleaning and inter dental cleaning aids after the game a statistically significant difference was found among the participants  $p < 0.021$ .

#### **ORAL HEALTH PREVENTION**

Before game 50% of children were unaware of brushing their teeth more than once daily, after game a statistically significant difference was found  $p < 0.031$ . Before game only 20% children were aware that brushing hard can wear off teeth, after game a statistically significant difference was noted among the participants  $p < 0.001$ . Before game no children were aware that smoking and stress can lead to gum disease, after game a statistically significant difference was noted among the participants  $p < 0.001$ .

#### **ORAL HEALTH CARE ATITUDE**

Before game only 18% of children were aware of regular dental visit every 6 months, after game a statistically significant difference was noted among the participants  $p < 0.001$ .

### **DISCUSSION**

The most common dental ailment in kids is dental caries. Despite recent scientific developments and the fact that caries is avoidable, the condition nevertheless poses a serious threat to public health. The incidence of caries is noticeably rising in emerging nations as a result of shifting patterns in eating and dietary habits. [4]. It is vital to be aware of any potential limitations when interpreting the results of the

current investigation. The influence of their knowledge and perspective on their oral health state cannot be determined because this is a self-reporting research. [5].

Despite its drawbacks, it can shed light on the extent of schoolchildren's oral health awareness. An important aspect impacting the parent's attention to the child's oral health requirement is the child's opinion of his or her own oral health. According to a research, 50% of respondents believe that maintenance is essential. Children are aware of the significance of maintaining good dental health. Approximately 57% of students rated their dental health as very excellent, which is comparable to the results of a 2012 research by Mehta et al. [6] Student knowledge of oral hygiene is evident from the data gathered from the questionnaire. The majority of students have placed a strong emphasis on getting regular dental checkups to avoid oral health issues.

**Table 1: Inferential Statistics**

		YES - Before	YES - After	p-value
1	Do you know that a good oral hygiene maintenance is essential in your day to day life	40	50	0.258
2	Do you know that you should clean your teeth twice daily	25	50	0.031*
3	Do you know that proper tooth brushing and tongue cleaning can cause bad breath	20	48	0.025*
4	Do you know that a regular dental check-up for every 6 months is essential to maintain good oral health	9	50	< 0.001*
5	Do you know that brushing hard can wear off your teeth and lead to sensitivity	10	48	< 0.001*
6	Do you know that materials other than tooth brush like dental floss and interdental tooth brush can be used to remove food deposits between the tooth	2	50	< 0.001*
7	Do you know that bleeding while brushing is a sign of gum disease	20	50	< 0.001*
8	Do you know that smoking can cause gum disease	0	45	< 0.001*
9	Do you know that it is essential to have a regular dental check-up for those children whose parents experienced an early tooth loss	2	50	< 0.001*
10	Do you know that stress is one of the risk factors for developing gum disease	0	45	< 0.001*
p-value based on Sign Test * = Statistically Significant (p < 0.05)				

**Table 2: Inferential Statistics**

		NO - Before	NO - After	p-value
1	Do you know that a good oral hygiene maintenance is essential in your day to day life	10	0	< 0.001*
2	Do you know that you should clean your teeth twice daily	25	0	0.045*
3	Do you know that proper tooth brushing and tongue cleaning can cause bad breath	30	2	0.210
4	Do you know that a regular dental check-up for every 6 months is essential to maintain good oral health	41	0	0.112
5	Do you know that brushing hard can wear off your teeth and lead to sensitivity	40	2	0.349
6	Do you know that materials other than tooth brush like dental floss and interdental tooth brush can be used to remove food deposits between the tooth	48	0	0.374
7	Do you know that bleeding while brushing is a sign of gum disease	30	0	0.038*
8	Do you know that smoking can cause gum disease	50	5	0.041*
9	Do you know that it is essential to have a regular dental check-up for those children whose parents experienced an early tooth loss	48	0	0.981
10	Do you know that stress is one of the risk factors for developing gum disease	50	5	0.829
p-value based on Sign Test * = Statistically Significant (p < 0.05)				

The majority of people were confident in the effectiveness of brushing as a technique of avoiding dental caries. Other research found it to be higher. [7,8] When compared to prior research, 32 percent of the kids brushed their teeth twice daily, which was substantial. [9,10] This is not only much more than what

Mehta et al. [10] and Harikiran et al. [11] and Zhu et al. [11] observed, but also equivalent to their findings. [12] Around 15% of the participants did not clean their teeth daily which is also much less than Mehta et al. study which may be due increase in awareness regarding oral health care in both parents and children in this population group. Majority of children reported that they use toothbrush and paste. In the present study, most of the school children 81% (71.4%) used toothbrush and toothpaste for cleaning their teeth, which is consistent and comparable with findings from other studies by El-Qaderi and Taani et al. [13] and Mehta et al [10].

The use of other recommended oral hygiene methods such as dental floss and mouthwash was rare. Similar observations were reported among north Jordanian school children.[7] This could be attributed to the lack of oral health education. There was good awareness among the children regarding the importance of regular tooth brushing for caries prevention (83.2%); this finding is similar to that in the study of Varenne et al., [12] Ramroop et al.,[14] and Mehta et al. [10] Children informed less frequent visit to the dental clinic. It was contrast to the findings of Gauri Kakatkar et al. [7] and El-Qaderi et al. [15] However, children (86%) also had a positive attitude toward dentist visit regularly to keep their teeth healthy. Children (76%) were not fearful to visit to the dentist. They were responsive and curious in listening to the advice regarding the oral hygiene/health maintenance. The finding was consistent with other studies.[10,16]

The awareness of the children regarding the fluoride or fluoridated toothpaste (26.5%) was slightly high to that from the study done by Mehta et al.,[10] Varenne et al.,[16] and Wyne et al.[17,18] According to Al-Omiri et al.,[7] fluoride awareness was 77%–87%. It was higher as compared to our study (12.6%). Wong et al. [8] found between 16% and 37% among Chinese children. One of the limitations of the study was sample size. Furthermore, even after all possible measures to standardize the presentations, it is possible that factors such as barriers of communication and efficiency of educators could have had an effect on the outcome of the study.

## CONCLUSION

Within the limitations of the study it can be concluded that snake and ladder game is effective in improving the knowledge of children towards oral hygiene and it can be concluded that the present study showed oral health awareness among the school children is good which could be attributed to easy accessibility to the dental health-care facility. Oral hygiene is essential for every individual and games were the most effective way in educating the children.

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