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Assessment of Oral Hygiene Status and Practices among a Sample of 12-Year-Old Chepang Children of Nepal

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ABSTRACT

Introduction: Hygienic oral health practices are necessary from a young age to ensure positive long-term oral and general health. The oral hygiene status and practices among the underprivileged Chepang children of Nepal have not been adequately assessed.

Objective: To assess the oral hygiene status and practices among the 12-year-old Chepang children of Nepal, and to identify the association of demographic variables and oral hygiene practices with the oral hygiene status of the children.

Methods: This was a descriptive cross-sectional study where a pretested questionnaire was used to assess the oral hygiene practices and the simplified oral hygiene index (OHI-S) to examine the status of oral hygiene among 160 Chepang children of central Nepal. Statistical analysis was done with SPSS v.17. Statistical significance was determined using an independent t-test and an ANOVA test.

Results: The study showed that 68 (42.5%) of the 12-year-old Chepang children had good oral hygiene, 68 (42.5%) had fair oral hygiene, and only 24 (15%) had poor oral hygiene. The mean OHI-S score for them was 1.62±1.09. Most of the children (138, 86.3%) regularly brushed their teeth and rinsed their mouth after meals (117, 73.1%), but tongue cleaning was performed by only 36 (22.5%) of them.

Conclusions: The study showed that oral hygiene intervention programs are needed for the Chepang children who do not go to schools and who do not stay at hostels.

Keywords: Brushing; children; mouth rinsing; oral hygiene; tongue cleaning.

INTRODUCTION

Good oral hygiene is necessary for the prevention of dental diseases like gingivitis, periodontitis,[1,2] and early childhood caries.[3] Good oral hygiene can be achieved by timely brushing of the teeth,[4] practicing rinsing after meals,[5] cleaning of tongue,[6] and appropriate method of brushing.[7] Practices from a young age ensure positive long-term oral and general health.[8,9] Cleaning teeth twice a day is less common in the Nepalese population.[10] The overall oral hygiene status of the children in Nepal has been depicted as poor.[11] Moreover, children from rural locations have been found to have poorer oral hygiene and significantly more gingival bleeding than urban children,[12,13] thus justifying the "inverse care law."[14] The Chepang people of Nepal are not only the rural dwellers but are one of Nepal's most disadvantaged indigenous groups.[15] There have not been enough studies regarding the oral hygiene of the Chepang children. A study published in 2013 depicted a reportedly low brushing habit among Chepang population.[16] Current study aims to assess the oral hygiene status and practices among a sample of 12-year-old Chepang children of central Nepal, and to identify the association of demographic variables and oral hygiene practices with their oral hygiene status.

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METHODS

A descriptive cross-sectional survey was conducted from March 2020 to April 2020 on 160 Chepang children aged 12 years, who attended three different dental camps organised by Nepal Dental Association in collaboration with the World Dental Federation (FDI) at Lekpani and Raksirang of Makwanpur district, Nepal and Khairahani, Upardanggadi and Chandibhanjyang of Chitwan district, Nepal. Ethical protocols in accordance with Declaration of Helsinki, 2013 were followed.

All the 12 -year-old Chepang children who were present at the camp venues were included in the study. However, subjects with active communicable disease or those who were aggressive, non-cooperative, and severely disabled were excluded from the study. One hundred and ninety

subjects fulfilled the age and ethnicity criteria, of which 16 were non-cooperative, 11 had active communicable diseases (mostly sore throat and the cough), and three were disabled (deaf and dumb). Excluding these 30 subjects from the study, the final sample size obtained was 160. Written informed parental consent and the children's assent were obtained from the participants and their guardians.

Sample size calculation was done based on a study conducted by Sharmila et al, which found that 10.8% of the children had good oral hygiene practices.[17] This was used to calculate the sample size using the formula $4pq/l^2$, where p = 11%, q = 89%, l = 5%. The sample size thus obtained was 156.

The research tools consisted of a structured questionnaire and a dental examination survey. The questionnaire was pretested in a similar survey conducted prior to the present study in a similar environment. The first part of the questionnaire consisted of the collection of details regarding demographic information like gender, education, and place of residence of the subject, as well as the education of the parent. The second part consisted of questions regarding oral hygiene practices. The questions in this part were retrieved from validated questionnaires in two studies.[16,18] The dental examination survey consisted of clinical assessment of oral hygiene status, with a valid and reliable index, the Simplified Oral Hygiene Index (OHI-S).[19] It was carried out, in school classrooms and premises with adequate natural light illumination, using a mouth mirror and #23 explorer. As a result, the examination was of World Health Organisation (WHO) type III. The two components of OHI-S viz. Simplified Debris Index (DI-S) and Simplified Calculus Index (CI-S) were calculated separately and summed up to get OHI-S for an individual. The OHI-S scores of '0' to '1.2' were interpreted as good, '1.3' to '3.0' as fair, and '3.1' to '6.0' as poor.[21] Throughout the study, only one examiner conducted the examination, thereby avoiding interexaminer variability. To assess intraexaminer variability, 10 percent of the subjects examined each day were selected randomly to be re-examined, and results were verified with the initial examination.[20] Kappa statistics were then used to determine the reliability, which resulted in 98.2% reliability for OHI-S.

The collected data were entered into Microsoft Excel and analysed with SPSS Statistics for Windows, version 17.0 (SPSS Inc., Chicago, Ill., USA) software. The mean OHI-S scores and standard deviations were calculated for the children across demographic variables and across their oral hygiene practices. The frequencies and percentages of children with good/fair/poor oral hygiene were also calculated. Independent t-test and one-way ANOVA tests were executed to identify the associations of various socio-demographic variables and oral hygiene practice with the oral hygiene indicator as OHI-S. The level of significance was set at $P < 0.05$.

RESULTS

One hundred and sixty children were examined in the study. Most children went to school but most of their mothers were illiterate (Table 1). The students had equal distribution of oral hygiene status of "Good" and "Fair" (Figure 1). The mean OHI-S score was found to be 1.62±1.09. The mean and standard deviation of the OHI-S scores for the children was more in children who did not go to school (Table 2). Most of the participating children used toothbrush to clean their teeth (Table 3). The simplified oral hygiene scores were higher in children who did not use toothbrush (Table 4).

Table 1: Socio-demographic distribution of study participants.

Variables		Frequency (%)
Gender	Male	76 (47.5)
	Female	84 (52.5)
Education	Goes to school	145 (90.6)
	Does not go to school	15 (9.4)
Education of parent(mother)	Literate	36 (22.5)
	Illiterate	124 (77.5)
Place of stay	Hostel	63 (39.4)
	Home at Chitwan	68 (42.5)
	Home at Makawanpur	29 (18.1)

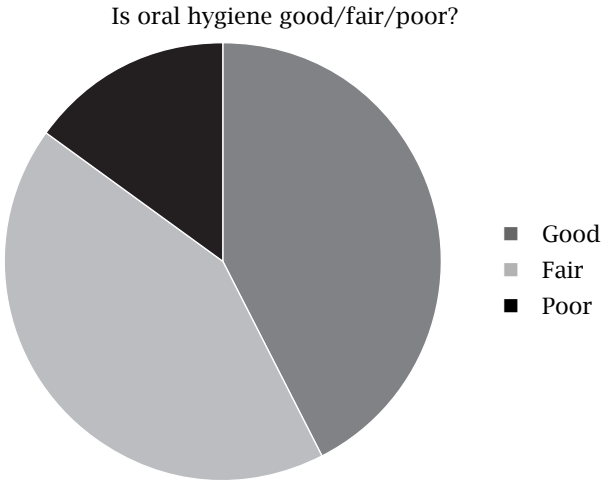

Figure 1: Oral hygiene status in 12 -year-old Chepang children, n (%).

Table 2: Association of demographic variables with simplified oral hygiene index scores.

Variable	Response	Mean±SD	P value
Gender	Male	1.68±1.09	0.493
	Female	1.57±1.08	
Education	Goes to school	1.56±1.05	0.014
	Does not go to school	2.29±1.22	
Education of parent	Literate	1.74±1.10	0.459
	Illiterate	1.59±1.08	
Place of stay	Hostel	0.89±0.57	<0.001
	Home at Chitwan district	2.31±1.11	
	Home at Makawanpur district	1.61±0.83	
ANOVA test for "place of stay" and Independent t-test for gender, education, and education of parent were done.			

Table 3: Frequency and percent of children with different oral hygiene practices, n (%).

Variable	Response	Frequency (percent)
Tooth brushing	Yes	138 (86.3)
	No	22 (13.7)
Tongue cleaning	Yes	36 (22.5)
	No	124 (77.5)
Rinsing after meals	Yes	117 (73.1)
	No	47 (26.9)
Technique of brushing	Circular	35 (21.9)
	Vertical	34 (21.2)
	Horizontal	69 (43.1)
	Never brush	22 (13.8)

Table 4: Association of oral hygiene practices with mean scores of simplified oral hygiene.

Variable	Response	Mean±SD	P value
Tooth brushing	Yes	1.54±1.06	0.024
	No	2.06±1.16	
Tongue cleaning	Yes	0.88±0.61	<0.001
	No	1.84±1.10	
Rinsing after meals	Yes	1.49±1.01	0.01
	No	1.99±1.22	
Technique of brushing	Circular	0.72±0.64	<0.001
	Vertical	0.99±0.69	
	Horizontal	2.12±1.94	
	Never brush	2.48±1.03	
ANOVA test for "technique of brushing" and Independent t-test for other variables were done.			

DISCUSSION

In this study, 68 (42.5%) children had good oral hygiene and only 24 (15%) had poor oral hygiene. The finding was in contrast with the study by Bhagat et al., which revealed only 1% of the children with good oral hygiene status and 55.3% children with poor oral hygiene status.[21] The difference might be due to the difference in food habits between the two population groups, as Chepang population mostly relied on natural food sources and did not have exposure to refined foods,[22] while the children dwelling in Terai region of Nepal had enough exposure to the same.

In the same way, children residing in school hostels had smaller OHI-S scores (indicating the better oral hygiene) compared to the children living in their homes. And the difference was statistically significant. This might be due to the fact that the children residing in hostel had enough time and opportunity to care for their oral health in addition to the higher level of care provided to them by the caretakers, which would not be the case for the children living in their home where relatively more focus would be on sustaining the living and where oral health education would not be a priority.

In this study, most of the children had illiterate parents (124, 77.5%) and surprisingly it was found that children with illiterate parents had better oral hygiene scores compared to children with literate parents. The difference, however, was not statistically significant. The finding does not match with a previous study among the school children in Kohalpur, Banke district of Nepal,[23] which showed better oral hygiene practices among the literate mothers compared to illiterate mothers with statistically significant difference.

The finding in this study that 138 (86.3%) children regularly brushed their teeth, is in contrast to a similar study among similar population viz. Chepang children published in 2013 showing that only 56% of the children cleaned their teeth daily.[16] The difference may be due to the difference in study times, however, a satisfactory answer could not be established to justify the mismatch.

The finding in this study that circular method was associated with better oral hygiene compared to other methods, matched with the findings of a study evaluating the effectiveness of different brushing methods,[24] but did not match with some other studies which indicate horizontal method to be the most effective in cleaning the teeth surfaces.[25-27] The better scores of oral hygiene in children practicing circular brushing technique in this study might be attributed to the fact that brushing demonstration at all those locations usually comprised of circular techniques, as reported by the teachers and local leaders in all those locations and, hence children following circular technique could have performed thorough brushing with better attention and motivation. However, further studies need to be performed in this regard, to probe for the match and mismatch.

CONCLUSION

The study showed that oral hygiene intervention programs are needed for the Chepang children who do not go to schools and who do not stay at hostels. Practice of tongue cleaning and circular brushing techniques could be focussed, for their oral hygiene promotion.

Conflict of interest: None.

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