DOI: https://doi.org/10.53350/pjmhs2115123583

ORIGINAL ARTICLE

Prevalence of Caries and it's Association with Oral Health Literacy in Children of Ngo's

MISHAAL MUSTAJAB[1], AIMEN IMTIAZ[1], MUHAMMAD NAUMAN UMAR[2], DANISH JAVED[3], SANA ZAFAR[3] AND AYESHA FAHIM[1]
[1]University College of Dentistry, University of Lahore, Lahore
[2]Faryal Dental College, Lahore
[3]Islam Dental College, Sialkot
Correspondence to: Ayesha Fahim, Email: ayeshafahim.af@gmail.com, Cell: +923325334893

ABSTRACT

Aim: The study was conducted to investigate the prevalence of dental caries and its association with oral health literacy among under privileged children of NGOs (Non-governmental organization).

Methodology: The main target of our research was to collect data of children studying at different NGOs (Non-governmental organization). Out of 4756 registered NGOs (Non-governmental organization) of Punjab, 2 were selected; The Noor Project and SOS Village. A total of 382 NGO's (Non-governmental organization) children aged 5-11 years old were examined for dental caries and oral hygiene. The data was collected through a validated questionnaire and a standard method of dmft screening was used.

Results: Exploratory analyses were performed to examine the distributions of the data and to identify outliers and missing data. Bivariate analyses were used to explore the associations between each of the covariates and OHL via Pearson's χ^2 statistics for categorical variables. The p-value of less than 0.05 was considered significant. There was significant association between oral health status and poor OHL amongst children.

Keywords: Children, Oral Health, Survey, NGO, Lahore.

INTRODUCTION

Oral diseases are one of the most prevalent health problems today because they are widespread globally and have an impact on quality of life. Moreover, oral health is an integral part of general health.[1] A healthy mouth means that a person can speak, eat and socialize without complaining of any active disease. Access to oral health care is essential for promoting and maintaining overall health and well-being. However because the most common known oral disease does not have a high mortality rate, their public health importance has not been appreciated.[2] Globally, oral diseases have been considered one of the major problems of the public health due to its high prevalence and incidence.[3] Dental Caries is the most common childhood oral disease affecting 60-90% of school children globally.[4] Alone in the US, 117,000 school hours are lost due to impacts of dental caries.[5]

Health literacy is "the degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions."[6] This includes a person's ability to read, understand, and effectively communicate about health-related issues and his / her ability to comprehend healthcare system and be able to maintain a good health.[7] Health literacy has been known to be a strong predictor of a person's behavior towards his / her health and health outcomes.[8] Whereas, insufficient health literacy is associated with poor self-perception, limited self-management skills and a deteriorating self-health.[9]

Oral health literacy (OHL) has gained popularity in the last ten years, it has been reported that appropriate health education can help to implant good oral health practices. Literature indicates that in order to develop effective health education, the assessment of knowledge, attitudes and practices is necessary. Being educated about oral health is an important element of health-related practices.[10] Research has also shown a link between increased knowledge of oral care and better oral health.[11]

According to WHO path finder survey which examined over 9 thousand individuals in 21 districts of Pakistan, dental caries was found to be the most common chronic childhood disease in the country, being five times more common than asthma and seven times more common than hay fever.[12] Most commonly, children are either enrolled in public and private schools, mosques/madrassas and NGOs (Non-governmental organization). A lot of work has already been done with regards to prevalence of caries and oral health knowledge in private, public schools and madrassas.[13]

However, literature search reveals that little work has been conducted in Pakistan regarding prevalence of dental caries and its association with oral health knowledge specifically targeting the children studying at NGOs (Non-governmental organization). Thus, the aim of this study is to determine the relationship between oral health literacy (OHL) and oral health status among children living in non-governmental organization (NGO) in Lahore, Pakistan.

MATERIALS AND METHODS

A convenience sampling technique was used to include participants form two NGOs of Lahore; "Noor trust project" and "SOS village". A cross-sectional study was conducted from January till August 2021. Written and verbal informed consent was obtained form participants prior to the study. The research was conducted in accordance with the World Medical Association Declaration of Helsinki and approved by the University of Lahore Institutional Review Board (IRB) (Protocol number: IRB-2021-1023).

Children above 5 years of age, who could understand and provide informed consent were included in the study. Children with systematic diseases and / or congenital anomalies, or any physical disability were excluded. Two teams of two trained investigators collected the data. Demographic data was collected from each patient, trainers performed intraoral examinations and recorded DMFT score using a standardized method.[14] Participants were informed that their participation is voluntary and they cn discontinue at any time they wanted. The Comprehensive Measure of Oral Health Knowledge (CMOHK) was used to record the oral health literacy of the respondents.[15]

Data Analyses: The entire data as entered in SPSS v 22 (SPSS 22.0; SPSS Inc., Chicago, IL, USA). Exploratory analyses were performed to examine the distributions of the data and to identify outliers and missing data. Bivariate analyses were used to explore the associations between each of the covariates and OHL via Chi-Square test for categorical variables. The p-value of less than 0.05 was considered significant.

RESULTS

A total of 382 NGO's (Non-governmental organization) children (120 females and 252 males) with mean age of 10 years were examined for dental caries and oral hygiene. Table 1 shows the responses of participants in the OHL questionnaire. Almost a majority of the respondents, **78%** think that teeth are good for us and **85%** participants agreed that we should take care of our teeth. When asked about the use of toothpaste for tooth brushing**, 58%** students were already using toothpaste. However, unfortunately **92.2%** participants told us about their consumption of sweets and

chocolates, only **15%** students have visited their dentist for any sort of dental treatments. Out of 100%, only **11%** students were aware of tooth decay and its consequences.

Table 1: Participant's knowledge about Oral Health Status

Responses to Oral Health Knowledge Questions	YES	NO
1. Are teeth good for you?	78%	22%
2. Should we take care of our teeth?	85%	15%
3. Consumption of chocolates and sweets?	92.2%	7.8%
4. Do you use toothpaste for brushing teeth?	58%	42%
5. Do you visit your dentist?	15%	85%
6. Do you know about tooth decay?	11%	89%

The mean DMFT for the participants was 6.43 ± 2.58. Majority (60.9%) of the children had limited OHL. Conversely, subjects with limited OHL had significantly higher mean values for decayed teeth ($p < 0.05$) and lower mean values for filled teeth ($p < 0.05$) as compared with subjects with adequate OHL. There was significant difference in the caries risk level between the 2 groups. However, there was no statistically significant difference in the missed teeth risk level between subjects with limited and adequate OHL (Table 2)

Table 2: Distribution of oral health characteristics by OHL levels

Variable	All participants (N) (%age)	Low OHL N(%age)	High OHL N(%age)	Sig.
Caries risk level				
Low	50(13.3)	44 (1.15)	6 (1.5)	0.01
Moderate	140(37.2)	103 (26.9)	37 (9.7)	
High	170(44)	139 (36.3)	31 (8.1)	
Extremely high	22(5.7)	38 (9.9)	03	
Caries experience				
DT	2.93 ± 2.07	2.95 ± 1.87	2.95 ± 1.87	0.004
MT	3.6 ± 2.1	3.29 ± 1.91	3.98 ± 2.33	0.019
FT	0.84 ± 0.95	0.95 ± 0.93	0.67 ± 0.96	0.561
DMFT	7.33 ± 2.68	7.18 ± 2.54	7.55 ± 2.89	0.281

OHL Oral health literacy, DMFT is number of decayed, missing, and filled permanent teeth, DT is number of decayed permanent teeth, MT is number of permanent teeth missing due to disease, and FT is number of filled permanent teeth.

DISCUSSION

This study was conducted to investigate the association between prevalence of caries and oral health knowledge among NGO's (Non-governmental organization) school children. Good oral health knowledge consists of implementation of two broadly defined sets of behavior. First is self-care habit such as dental hygiene, restriction of sugar products and use of fluoride products and second being the utilization of dental services such as regular dental visits, oral health education and professionally applied preventive measures.[16] Children were divided into 2 groups on the basis of dft i.e less than 3 and greater than 3. Scale from 0 to 10 was selected (0 referring to poor oral hygiene and 10 referring to satisfactory oral hygiene). In this study, there was significant associations between several oral health characteristics and the OHL levels. About 66% (246 participants) of children in NGO's (Non-governmental organization) had dft score less than 3, which means 7.8 on the scale of 0 to 10 have oral health knowledge. While 34% (126) of children had dft score more then 3, which shows 3.72 have oral health knowledge. Our study shows that the more oral health knowledge the children had, the less the ratio of decayed teeth. Our study among NGOs (Non-governmental organization) school children reveals that 54% of the children have positive response toward oral health knowledge.

The greatest contribution of dft has been for decayed teeth rather than the restored or extracted ones. Similar studies have been done internationally like in Mexico where mean dft recorded was 2.36.[17] In Saudi Arabia it was 3.20,[18] whereas in Brazil the mean dft recorded was 1.82.[19] At the national level, Khan reported mean dft of children around 5-11 year to be 2.1. Whereas in our study, the mean dft score was 2.51. These disparities in oral health have been attributed to a complex web of social, psychological, and structural factors, such as nutrition, oral hygiene, healthcare utilization, and access to care.[20] OHL has proved to be critical in reducing oral health disparities and in promoting oral health.[21] A possible explanation is that an individual with adequate OHL not only recognizes oral diseases at an earlier stage than someone with limited OHL, but also is more prompt in seeking the required treatment. Individuals with limited OHL are often more prone to delayed diagnoses of one's dental conditions which is explained by the higher percentage of missing teeth in this group.

Due to our limited access, we were able to approach 2 NGOs (Non-governmental organization). More NGOs (Non-governmental organization) should have been included and screened not only of Lahore but other cities of Pakistan as well. Awareness of dental hygiene and oral diseases should be provided to all teaching faculty at these NGOs (Non-governmental organization). Free dental checkup and treatment should be provided. Preventive measures such as fluoride therapy, fissure sealant and teaching the appropriate way of brushing. Oral health education and promotion through community and clinical practice will play a leading role in these NGOs (Non-governmental organization).

CONCLUSION

The result of this study concluded that dental health status of children studying at different NGOs need more attention and they should match the global standards proposed by WHO. This study highlighted the oral health knowledge, practices and attitude among the children residing in NGOs (Non-governmental organization) and the need to encourage more dental campaigns and outreach programs. New policies must be introduced and must have financial aid by the government to make them effective and functional. Preventive measures such as fluoride therapy, pit and fissure sealant, oral health products, medicines and teaching the appropriate way of brushing must be used.

REFERENCES

1. Watt R, Daly B, Allison P, Macpherson L, Venturelli R, Listl S et al. Ending the neglect of global oral health: time for radical action. The Lancet. 2019;394(10194):261-272.
2. Bersell CH. Access to Oral Health Care: A National Crisis and Call for Reform. J Dent Hyg. 2017 Feb;91(1):6-14. PMID: 29118145.
3. Zhang J, Leung K, Sardana D, Wong M, Lo E. Risk predictors of dental root caries: A systematic review. Journal of Dentistry. 2019;89:103166.
4. Lin M, Griffin S, Gooch B, Espinoza L, Wei L, Li C et al. Oral health surveillance report [Internet]. US Department of Health and Human Services Centers for Disease Control and Prevention; 2019 p. 1-68. Available from: https://www.cdc.gov/oralhealth/pdfs_and_other_files/Oral-Health-Surveillance-Report-2019-h.pdf
5. Fraihat N, Madae'en S, Bencze Z, Herczeg A, Varga O. Clinical Effectiveness and Cost-Effectiveness of Oral-Health Promotion in Dental Caries Prevention among Children: Systematic Review and Meta-Analysis. International Journal of Environmental Research and Public Health. 2019;16(15):2668.
6. Morrison A, Glick A, Yin H. Health Literacy: Implications for Child Health. Pediatrics In Review. 2019;40(6):263-277.
7. Chen X, Hay J, Waters E, Kiviniemi M, Biddle C, Schofield E et al. Health Literacy and Use and Trust in Health Information. Journal of Health Communication. 2018;23(8):724-734.
8. Carrara A, Schulz P. The role of health literacy in predicting adherence to nutritional recommendations: A systematic review. Patient Education and Counseling. 2018;101(1):16-24.
9. Amoah P, Phillips D. Health literacy and health: rethinking the strategies for universal health coverage in Ghana. Public Health. 2018;159:40-49.
10. Firmino R, Martins C, Faria L, Martins Paiva S, Granville-Garcia A, Fraiz F et al. Association of oral health literacy with oral health behaviors, perception, knowledge, and dental treatment related

outcomes: a systematic review and meta-analysis. Journal of Public Health Dentistry. 2018;78(3):231-245.
11. Batista M, Lawrence H, Sousa M. Oral health literacy and oral health outcomes in an adult population in Brazil. BMC Public Health. 2017;18(1).
12. Siddiqui A, Alshammary F, Mulla M, Al-Zubaidi S, Afroze E, Amin J et al. Prevalence of dental caries in Pakistan: a systematic review and meta-analysis. BMC Oral Health. 2021;21(1), 1-12.
13. Zafar R, Urooj A, Masood S. Dental Caries in Relation to Sugar Consumption among Children - A Study from Southern Punjab, Pakistan. BioMedica. 2021;37(2):110-113.
14. Klein H, Palmer C, Knutson J. Studies on Dental Caries: I. Dental Status and Dental Needs of Elementary School Children. Public Health Reports (1896-1970). 1938;53(19):751.
15. Macek M, Haynes D, Wells W, Bauer-Leffler S, Cotten P, Parker R. Measuring conceptual health knowledge in the context of oral health literacy: preliminary results. Journal of Public Health Dentistry. 2010;70(3):197-204.
16. Firmino R, Ferreira F, Martins C, Granville-Garcia A, Fraiz F, Paiva S. Is parental oral health literacy a predictor of children's oral health outcomes? Systematic review of the literature. International Journal of Paediatric Dentistry. 2018;28(5):459-471.
17. García Pérez A, Barrera Ortega C, González-Aragón Pineda Á, Villanueva Gutiérrez T, Pérez Pérez N, Calderon Uriostegui D. An inverse relationship between obesity and dental caries in Mexican schoolchildren: a cross-sectional study. Public Health. 2020;180:163-167.
18. Alotaibi F, Sher A, Khounganian R. Prevalence of Early Childhood Caries among Preschool Children in Dawadmi, Saudi Arabia. International Journal Of Medical Science And Clinical Invention. 2017;4, 3010-3014.
19. Souza Junior L, Cesaro B, Oliveira P, Bordin R. Dental Caries: A Schoolchildren Epidemiological profile in a Seaside Town, brazil, 2017. International Journal of Advanced Engineering Research and Science. 2020;7(4):245-249.
20. Wilson F, Wang Y, Borrell L, Bae S, Stimpson J. Disparities in oral health by immigration status in the United States. The Journal of the American Dental Association. 2018;149(6):414-421.e3.
21. Henshaw M, Garcia R, Weintraub J. Oral Health Disparities Across the Life Span. Dental Clinics of North America. 2018;62(2):177-193.