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Assessment of Oral Health Status and its Relationship with Daily Performances, Body Mass Index, and Eating Habits in Orphanage Facility of District Peshawar

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ABSTRACT

Introduction: Quality of life and welfare also depend on dental health. Excellent oral health goes beyond pain-free mouth and face. The rationale for this study is to explore the critical link between oral health and overall well-being in orphaned children, a population often deprived of adequate healthcare. Poor oral health can negatively impact daily performance by causing pain, discomfort, and decreased focus, while also affecting Body mass Index (BMI) and eating habits through difficulties in eating and nutrient intake.

Aims & Objectives: To assess the relationship between oral health status and its impact on daily performance, BMI, and eating habits among children residing in orphanages of District Peshawar.

Place and Duration of Study: It was conducted at the Orphanage of Mercy Educational Complex in Peshawar after obtaining Ethical and Administrative approval during July to December 2023.

Material &Methods : A cross-sectional study was conducted to assess oral health and its effects on everyday activities on 209 participants of 6th-10th grade Peshawar Orphanage Children using a pre-validated questionnaire based on Thailand's Children oral Effects on Daily Performances (COIDP) instrument assessed oral health. The BMI was calculated, and height was measured through stadiometer, whereas the decaying, missing, filled teeth (DMFT) index was calculated by adding decaying, missing, and filled teeth. The SPSS software package, version 20.0 was used for data analysis. P-value of < 0.05 was considered significant.

Results: Middle class students made up 71.8% and secondary school boys 28.2%. Toothaches affected 82.3% of boys. Oral hygiene was challenging for 79.4% of Child-Oral Impact on Daily Performance (c-oidp) questionnaire respondents, and amongst them majority (54.1%) were secondary school students. 35.41% had low DMFT/dmft scores, indicating good oral health.

Conclusion: The study concludes how age and level of schooling affect perceptions related to oral health. DMFT/dmft values were lower generally in the caries index.

INTRODUCTION

The level of oral health is critical in the balance of the quality of life and wellness at large. Biting, chewing, smiling, talking, maintaining mental and social wellbeing', are all areas that the World Health Organization identified as crucial[1]. The sores and infections fall along this line. Other studies have gone further to detail such relationships, regardless of their multisource or single-sourced data. It is well argued that the linkage between dental hygiene and the quality of life is beyond reproach[2]. For the last fifteen years, research into the psychological, social, and occupational implications of dental problems has been primarily conducted using self-report surveys. Oral health problems might have a significant effect on an individual's overall health, even though they are infrequently fatal. As a result of its relationship to general health, the WHO has included oral health as part of its Global Oral Health Initiative[3,4]. The connection between oral health and overall general health is intricate. Pain, fear, and difficulty in fulfilling social obligations because of not being able to eat, communicate, and smile have all been recognized as factors[5,6]. These differences are mirrored in the oral diseases' distribution due to parents' and children socioeconomic status. Therefore, it would be fair to assume a distinction in orphans or children that grow with the care of adoptive parents' oral diseases case and their quality of life[7,8].That could be said

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about children that live in the streets, whose living conditions and related activities made it more probable to experience several health issues like poor oral hygiene, infectious diseases, and lack of nutrition. The fact that orphans live with a family gives physical, nutritional, and emotional protection to the child. On the opposite, children without parents or living in poor families often have the worst outcome[9]. However, these measures were mostly designed to assess the oral health of the elderly. As regards children, several conceptual and methodological challenges assumed, including children's age, emotional and verbal development, cognitive maturity, and alterations in teeth and facial characteristics, which predominantly affect how children perceive health and illness. Such widespread use required a thorough translation and cross-cultural adaptation of the tool to ensure that the psychometric qualities of the original tool were preserved in the adapted one in each country. Children's oral impact on daily performances (C-OIDP) has not been used to measure Pakistani children's oral health related quality of life (OHRQOL), despite the widespread use around the world due to the lack of other Urdu-language OHRQOL measuring tools. The present study sought to bridge this gap by investigating the links between dental health and BMINDA, DMFT score, and everyday children's routine at Mercy Educational Centre, Peshawar premises[10,11]. A child's bond to a parent and a parent's to a child is not only a basic human right to life but also a socially expected one[12]. Life in an orphanage is not family life; rather, orphanages provide food, housing, and other material necessities to the child without any emotional help[13]. Children who have difficulty with their parents' psychosocial growth patterns are more vulnerable to health and behavior problems[14-16]. However, the orphan population merits particular attention. C-OIDP has been validated and proven to be an accurate instrument for testing the impact of oral disorders on the daily lives of children across the globe[17]. The rationale for this study is to explore the critical link between oral health and overall well-being in orphaned children, a population often deprived of adequate healthcare. Poor oral health can negatively impact daily performance by causing pain, discomfort, and decreased focus, while also affecting BMI and eating habits through difficulties in eating and nutrient intake. Understanding these relationships in orphanages of District Peshawar will help develop targeted interventions to enhance the quality of life and health outcomes in this vulnerable group**.** Thus, this study was aimed at assessing dental health affects, daily living and BMI via the DMFT index (decaying, missing, filled teeth).

MATERIAL AND METHODS

This cross-sectional research was conducted at the Orphanage of Mercy Educational Complex in Peshawar. The study was conducted after obtaining Ethical and Administrative approval from KMU IRB vide No: KMU/IPHSS/Ethics/2022/AO/085 during July to Dec 2023[18-20]. A pre-validated questionnaire adapted from the Children Oral Impacts on Daily Performances instrument developed in Thailand was used to assess the oral health condition of the children[13]. The research tool used to gather data in this study was selected based upon its all-encompassing nature and composition. In particular, the C-OIDP tool allowed to cover numerous variables pertaining to the oral health status, daily activities, and other appropriate factors, which was highly suitable for the purpose of this research. In addition, the first part of the questionnaire included the children's age and school year as well as the status of their oral health, which were recorded on a registration form. The second part of the questionnaire comprised 8 questions regarding the impact of oral health problems on their daily activities. To assess the impacts of oral health on the daily life of children, The C-OIDP index was developed comprising eight indication tasks related to daily life in terms of eating, speaking, brushing teeth, sleeping, being in a bad mood, studying, socializing, and smiling [21]. The questionnaire was clarified to the kids in Urdu with assistance from the caregivers and educational personnel. Following that, the one-to-one interview-based questions were asked from each participant who gave verbal consent. Clinical evaluation of every participant was done and noted on Sheet 1 whether they had the clinical issues noted or not. Furthermore, interviews with each research participant were conducted to complete sheet 2 of the provided questionnaire. The children were initially asked if they had experienced any oral health issues in the previous six months; if the answer was "no," no more questions were posed, and the result was recorded as 0. If they responded with "yes," they were afterward questioned about the seriousness and regularity of each OIDP performance every day.

Data Analysis: The SPSS software package, version 20.0 was used for data analysis. Descriptive analyses were used to calculate frequency distributions and percentages of demographic and clinical data as well as the

C-OIDP, DMFT and BMI. Moreover, the prevalence in percentages of each C-OIDP item was calculated as the impact score for each performance was obtained by multiplying severity and frequency scores (range 0 to 9), and the total impact score was calculated by adding the impact scores of all eight performances (range 0 to 72). This overall score was divided by 72 and multiplied by 100 to obtain the total percentage score. Additionally, Cross tabulations were performed using Chi square test to determine the association between age group and problems reported by participants.

RESULTS

Regarding the classification by class, most participants fall within the middle-class category, comprising 71.8% (n=150) of the sample, while the secondary class accounts for 28.2% (n=59) of participants. In terms of age distribution, the analysis reveals that nearly half of the participants, 45.9% (n=96),belong to the age group of 9-12 years old, whereas the remaining 54.1% (n=113) fall within the 13-16 years old category. These findings offer valuable insights into the composition of the study population, highlighting the predominance of middle-class participants and a relatively balanced distribution across the specified age groups.

Table 1: Frequency & Percentage of Participants Demographics n=209

Demographics	Response	Frequency(%age)
Class	Middle	150 (71.8%)
	Secondary	59 (28.2%)
Age	09-12	96 (45.9%)
	13-16	113 (54.1%)

71.8% (n=150) of participants had middle and 28.2% had secondary educational level (Table 1).

Descriptive Statistics of Daily Performances showed that 62.2% of the children had little difficulty in eating. 33.5% of the children had eating difficulty >3/week (extremely frequent). 58.4% of the children had no difficulty in speaking clearly. 47.8% had little difficulty in cleaning the mouth. (Table 2).

An independent t-test was computed to find the significant difference in C-OIDP score due to problems faced by the participants. The result showed that participants facing bleeding gum and swollen gum problems have a significant effect on the C-OIDP score i.e., P-value of 0.5 and 0.2 respectively. No significant difference was found in the C-OIDP score concerning the other problems faced by participants, as p-values are less than 0.05 (Table 3).

respect to the other problems faced by participants, as p- values are less than 0.05.

Table2: Descriptive Statistics of Daily Performances

COIDP	Responses	Frequency (%age)
Difficulty in Eating	No difficulty	79(37.8%)
	Little difficulty Absent	130(62.2%)
	On and off in a month	79(37.8%)
Eating Difficulty Frequency	(relatively infrequent)	7(3.3%)
	On and off in a week (very frequent)	53(25.4%)
	> 3/week (extremely frequent)	70(33.5%)
Difficulty in Speaking Clearly	No difficulty	122(58.4%)
	Little difficulty	87(41.6%)
Speaking Clearly Frequency	Absent (no difficulty)	122(58.4%)
	On and off in a month (relatively infrequent)	59(28.2%)
	≥ 3/week (extremely frequent)	28(13.4%)
Cleaning the Mouth (e.g. Brushing Teeth & Rinsing)Gravity	No difficulty	43(20.6%)
	Little difficulty	100(47.8%)
	Medium difficulty	66(31.6%)

Table3:Association of Age with Dental Problems among Participants n=209

Problems Reported		Age in Years		Total	P-Value
		9-12	13-16		
Toothache	Yes	88 (51.2%)	84 (48.8%)	172 (100%)	0.001
	No	8(21.6%)	29 (78.4%)	37 (100%)	
Sensitivity	Yes	66 (60.6%)	43 (39.4%)	109 (100%)	0.001
	No	30(30%)	70(70%)	100 (100%)	
Caries	Yes	83 (66.4%)	42 (33.6%)	125 (100%)	0.001
	No	13 (15.5%)	71 (84.5%)	84 (100%)	
Bleeding Gums	Yes	37(43%)	49(57%)	86 (100%)	0.573
	No	59(48%)	64(52%)	123 (100%)	
Swollen Gums	Yes	69 (48.9%)	72 (51.1%)	141 (100%)	0.237
	No	27 (39.7%)	41 (60.3%)	68 (100%)	
Tartar	Yes	60 (62.5%)	36 (37.5%)	96 (100%)	0.001

	No	36 (31.9%)	77 (68.1%)	113 (100%)	
MouthSores	Yes	68 (56.2%)	53 (43.8%)	121 (100%)	0.001
	No	28 (31.8%)	60 (68.2%)	88 (100%)	
Bad Breath	Yes	69 (56.6%)	53 (43.4%)	122 (100%)	0.001
	No	27(31%)	60(69%)	87 (100%)	
Deformed MouthOr Face	Yes	4(100%)	0(0%)	4(100%)	0.043

Toothache, sensitivity, caries, tartar, mouth sores, bad breath and deformed mouth/face showed strong significant association with categories of age i.e. 9-12 & 13-16 years after Chi-square test application. Moreover, bleeding gums and swollen gums showed no significant association with categories of age i.e. 9-12 & 13-16 years after the Chi-square test application**.**

DISCUSSION

This study at the Orphanage of Mercy Educational Complex in Peshawar examined dental health andits effects on daily functioning, DMFT, and BMI in underprivileged children. It seeks to address a national information gap concerning this population. Institutionalized orphans' guardians teach them oral and general health. The researcher questioned each participant one-on-one in this interview study. The 9-16-year-old 6th–10th grade group was chosen.

This research examines dental health, daily activities, DMFT scores, and BMI. The most prevalent oral health issues were pain, bleeding gums, swollen gums, improper tooth space and position, breath, and mouth sores. Other research found similar or somewhat different findings [21,22].

Participants had a 100% literacy rate since they were all enrolled at the orphanage (educational complex), where 71.8% were in middle school (6th, 7th, and 8th) and 28.2% in secondary school. The most common complaints in our research were toothache, bleeding gums, swollen gums, incorrect tooth spacing, mouth sores, and foul breath. A Nepalese study reported different prevalence rates: 32.9%, 17.8%, 14.4%, 3.1%, 13.7%, and 17.0%[23].

Thus, the perceived problems reported by our study participants were higher than those reported inNepal and one more study conducted in Brazil, likely due to the overpopulated environment and underprivileged residents of orphanages and the mental and emotional strain these children face daily[24,25].Daily performance data showed cleaning and socializing were the most common issues (79.4% & 70.8%), followed by eating, sleeping, and speaking (62.2%, 53.1%, and 36.8%, respectively), while maintaining emotional stability was the least reported daily impact. A 2019 Indian study found 47.4% eating difficulty, followed by difficulties with mouth cleaning, sleep, speaking, and retaining emotions at 42%, 29.2%, 36.8%, and 35.6% respectively [26]. Prevalence of difficulty in talking was comparable to our study. In 2019, another Saudi Arabian research found similar findings for social interaction difficulties, with a 68% daily impact [27]. Usually, eating disabilities cause toothache from oral sores and inflamed gums. Our average daily effects rating was high because facility carers were unable to provide individual attention to all children's oral health issues, which hampered their OHRQoL. An independent sample t-test found a significant connection between C-OIDP and dental issues such as sensitivity, bleeding gums, and swollen gums (p-value <0.05). Aberrant tooth color and fractured permanent teeth were not significantly associated [28]. DMFT/dmft categories are caries-free/no caries, mild caries, moderate, and severe. We found 26.32% of subjects were caries-free, 35.41% low, 24.88% moderate, and 13.4% high. DMFT/dmft caries were 22.9% “high” in 2018 Brazilian research [29]. Thus, oral caries had the biggest detrimental influence on individuals' OHRQoL. Dental caries (dmft/DMFT) may be described by caries experience grades, but not intensity. Oral diseases may affect health and lifestyle. Vital caries usually cause pain, discomfort, functional, and cosmetic limits. Parents help kids improve their dental hygiene. Parental instruction directly tied to socioeconomic position affects children's dental health. Therefore, the high number of caries documented may be due to orphans. Similarly, in another study, individuals with periodontitis showed poorer dietary habits, higher BMI, and lower OHRQoL than those without the condition. These results underscore the importance for oral health practitioners to evaluate diet, BMI, and OHRQoL when diagnosing and treating periodontitis[30].It is recommended that dentists refer patients with poor dietary practices to a dietitian. Furthermore, dentists and dietitians should work together to develop strategies to tackle these issues effectively [31]. The study is limited by its cross-sectional design, which only provides a snapshot of the relationship between oral health and other variables without establishing causality. Additionally, the reliance on self-reported data for daily performance may introduce bias, and the sample is restricted to orphanages in District

Peshawar, limiting generalizability. Despite these limitations, the study highlights the critical need for targeted oral health interventions in orphanages. Improving oral health in this vulnerable population could enhance their daily performance, nutritional status, and overall quality of life, guiding policy changes and healthcare strategies in similar settings.

CONCLUSION

The current study provides insight into the common dental issues. Cleaning one's mouth was the everyday activity most frequently claimed to have been impacted by oral health problems. Despite having dental caries, the severity was low according to the total caries index score, which showed a significantly smaller number of high DMFT/dmft scores. The participants affected by oral conditions needed to be treated by stopping additional interference with their everyday lives. Additionally, our results showed that a sizable portion of participants were classified as having a healthy weight, while a smaller proportion was underweight or obese.

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