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Original Article

Exploring Oral Health Knowledge and Practices among Early Childhood Caregivers: A Cross-Sectional Survey

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Abstract

Early childhood is a crucial developmental phase of a child's well-being, which lays the foundation for their future growth. Lack of good oral practices may cause dental issues during this fundamental phase of development and have a long-lasting impact on a child's overall well-being. This cross-sectional study was conducted at a tertiary care hospital in Karachi, Pakistan, to explore oral health knowledge and practices among the caregivers of young children. A sample of 94 participants, including parents, caregivers, early childhood educators, and healthcare professionals (HCPS), was included through a convenient sampling technique. An online survey questionnaire was administered, which covered various aspects of oral hygiene practices to prevent common oral diseases among children. All statistical analyses were performed using SPSS 22.0. Statistical significance was accepted as p ≤0.05. Results of the study revealed no significant differences in oral health knowledge and practices based on age and gender. However, comparisons based on profession and roles showed a significant difference. Most participants agreed on the importance of regular oral hygiene practices. However, their opinions differed on certain oral hygiene practices, including the frequency of brushing and the timing of the first dental visit. This study underscores the importance of targeted education and interventions to improve oral health outcomes during the critical developmental phase of childhood.

Keywords: Dental disease, early childhood caregivers, early childhood development, early childhood educators, oral hygiene practices

INTRODUCTION

Oral health is critical to an individual's overall well-being (Bhatnagar, 2021). The mouth serves as a gateway to the body, and maintaining good oral health is essential for promoting general health (Agrasuta, et al., 2021). According to WHO, oral health is the state of well-being of the mouth, teeth, and orofacial structures that enable an individual to perform essential functions such as eating, breathing, and speaking. Oral diseases are a significant and common public health issue worldwide and affect all age groups (Agrasuta, et al., 2021). Globally, the burden of oral health disease is growing mainly in low- and middle-income countries. A Global Oral Health Status Report by WHO (2022) has reported that globally, 2 billion people have been affected by dental caries of permanent teeth, and 514 million children suffer from early childhood caries. Poor oral hygiene, along with other risk factors such as smoking/tobacco and systemic diseases such as diabetes, may cause oral health issues that include dental caries, periodontal (gum) disease, tooth loss, and oral cancer (Bhatnagar, 2021).

Early childhood is a crucial phase of developing a child's physical and mental well-being, laying the foundation for their future growth. Lack of good oral practice may cause dental issues among children during their developmental phase (Iqbal et al., 2022). Untreated and unattended dental diseases can have a negative and lasting impact on a child's oral and general health. This non-communicable disease can cause discomfort, pain, and infection, leading to difficulty in taking nutrition that consequently affects the child's growth, speech, and orofacial development (Memon et al., 2016). Maintaining a child's oral health primarily depends on parents, caregivers, and healthcare professionals involved in a child's early development (Leghari, 2014). Brushing twice daily and using the floss once a day is essential for optimal oral health. It is important to gently wipe a baby's gums using clean, damp gauze twice daily.

The first tooth should be brushed using a soft infant toothbrush designed for young children as soon as it appears. The first dental visit of a child should be by the age of one or when the first tooth appears because children cannot do self-oral care. Parents and caregivers should perform routine oral care of their children and facilitate learning oral health habits (Leghari, 2014; Richter et al., 2019). If proper oral hygiene practices are taught before the age of 5, they can be deeply ingrained and established (Ashkanani & Al-Sane, 2013). In Pakistan, there is a lack of literature focusing on the social and economic factors pertinent to oral health and dental hygiene. In this regard, there is also a lack of education for the massive communities (Albino et. al., 2012). Even in some private elite schools, there are no routine check-ups and a lack of support for parents to understand the general health indicators of young children, leaving parents unaware of the importance of oral health. Besides, it can be seen in the general scenario that people in Pakistan have poor dental and oral hygiene (Khalid et al., 2020). Parents' knowledge is paramount to

support young children's oral hygiene and overall health. It becomes more crucial early as children build foundations for their future.

LITERATURE REVIEW

Various research studies have shown a direct association between oral hygiene practices and parents' knowledge of the oral outcomes of their children. The mother's role in the first three years of a child's life is crucial, as she is the child's primary caregiver. Higher oral health knowledge among mothers directly reduces the chances of dental diseases such as dental caries. However, this is only possible if mothers have enough knowledge about healthy oral habits and practices (Iqbal et al., 2022). Factors such as oral health literacy, age, education level of parents, socioeconomic level, practices, and parents' knowledge are linked with their optimal oral health and their children's oral health. Identifying the level of oral health literacy among the caregivers of children helps dental professionals design and implement oral health education programs to reduce the burden of oral disease among young children (Adil et al., 2020).

A study conducted by Iqbal et al., (2022) regarding mothers' Knowledge, Attitudes, and Practices (KAP) found that only 24.9% had adequate knowledge, and 29% had poor attitudes toward their children's oral health. Therefore, a mother's KAP is the primary determinant of preventing the risk of oral disease as well as for optimal oral health of a child. Oral health literacy and practices, age, gender, education level, socioeconomic level, and parents' profession are some critical factors significantly linked to their children's oral health. The low education level of caregivers is a significant determinant of oral health and is associated with inadequate oral health practices among children. Studies have shown that mothers often play the role of primary caretakers of children, and their perception of their oral health reflects in children's health status (Minervini et al., 2023). Furthermore, the low socio-economic factor is associated with a higher prevalence of dental caries due to limited access to preventive dental services. Educated parents and caregivers are more likely to prioritize their children's oral health and opt for preventive measures, contributing to better oral outcomes (Gokhale & Nuvvula, 2016).

According to the WHO (2022), Southeast Asia Action Plan for Oral Health, oral diseases are among the most common non-communicable diseases affecting different age groups in the Southeast Asian region. According to the report, more than 900 million cases of multiple dental diseases, including untreated caries, periodontal disease, and oral cancer, were reported in 2019. 43.8% and 135 million cases of untreated caries of the primary teeth were estimated among children between one to nine years old (WHO, 2022). A study was conducted among 2-6-year-old children in kindergartens in Shanghai, China. During dental examinations, dental caries was present among 1088 out of 2052 children with a prevalence of 53.02%, and the filling rate of teeth was just 0.29% (Shang et al., 2008). A cross-sectional study conducted in India consisting of 13 200 primary school children between the ages of 6-11 years old found a 78.9% prevalence of dental caries among the children (Hiremath et al., 2016).

Pakistan is also facing dental diseases such as dental caries, periodontal caries, and oral cancer as public severe issues, and around 60% of the population in Pakistan has dental caries (Hassan, 2022). According to Habib et al., (2023), dental caries is the most prevalent chronic disease among children, affecting 51% of preschoolers as of 2012 data. Gum disease or gingivitis is also prevalent among children, affecting 60-90% of school-aged children due to lack of oral care. A multicentre cross-sectional study was conducted over two years in Karachi, Pakistan, to identify the prevalence of the disease among 1062 pediatric patients aged 0-17. The highest number of diseases were found in children under age one, and dental caries was the most prevalent disease (44.7%) (Ahmed et al., 2017).

Another cross-sectional study was conducted by Mohiuddin et al., (2015) among 1600 schoolchildren between the ages of 6 and 12 in Karachi city. This study revealed that the prevalence of caries among the primary teeth was three-fourths (74.9%). Another study of 1000 preschool children between 3 and 6 who were assessed for dental caries found that 51% of participants had caries (Dawani et al., 2012). Dental caries among children is given the term 'Early Childhood Caries' (ECC), which refers to one or more carious, cavitated, or non-cavitated tooth surfaces that are missing or filled due to a cavity in a primary tooth, primarily affecting the upper anterior (Irfan et al., 2023). The frequency of ECC among children aged three to six years in India is reported (at 51.9%). However, Pakistan registered (44.4%) of cases (Irfan

et al., 2023). Various studies have indicated that parental knowledge and attitudes toward oral healthcare can significantly impact oral health status and prevent oral disease among children (Rebelo et al., 2019).

Research Problem

There is a lack of studies that explore the knowledge and practices of young children's parents, particularly in the urban settings of Karachi, Pakistan. Hence, this research intends to study the recent trends of how parents and caregivers perceive, know, and practice pertinent to their young children's oral and dental hygiene. This research study explores the trends that inform the knowledge community of recent parental practices.

Research Objectives

- To explore the knowledge and practices of oral health among parents, caregivers, and healthcare professionals of young children
- To measure the differences in understanding of oral health care among early childhood caregivers by gender
- To compare specific oral health practices adopted by early childhood caregivers across different professions.

METHODOLOGY

A cross-sectional survey was conducted in a tertiary care hospital in Karachi, Pakistan, with 94 diverse audiences, including parents, caregivers, early childhood educators, and healthcare professionals involved in early childhood development. Data collection was carried out using an online survey questionnaire for potential attendees. The questionnaire included various questions, such as multiple-choice and closed-ended questions. Participants were asked about their oral hygiene practices, awareness of the importance of early childhood oral health care, common dental diseases among children, and knowledge of oral hygiene practices to prevent dental disease. All statistical analyses were performed using SPSS. Frequency and percentage were computed for categorical variables. A comparison of participants' oral health knowledge and practice responses was analyzed using the Chi-square test or Fisher's exact. Statistical significance was accepted as $p \leq 0.05$. Participants voluntarily agreed to participate in the study by providing online consent with a 'yes' statement during participation. Moreover, each participant was given a code to safeguard confidentiality and anonymity. Furthermore, all data were kept safe in a password-secured computer for seven years and removed after the study's publication per the institution's policy.

RESULTS & FINDINGS

A total of 94 participants were involved in the conduct of the present study. Most were female between 31 and 40 (see Figure 1). 50% were healthcare professionals, 13.8% were early childhood educators, and 36.2% were parents (see Figure 2). It has been found that Early childhood oral care is vital for a child's overall well-being, and 84 (89%) of the participants were found to be aware of the spread of oral disease in children. The study also revealed that the optimal timing of a child's first dental visit varied; 44 (47%) suggested the first dental visit by the age of one or upon the eruption of the first tooth, 37 (39.3%) recommended the visit between the ages of 3-5 years, and 13 (13.8%) asserted that dental visits are not required during early childhood. Of the 94 participants, 79 (84%) affirmed the duration of brushing twice a day, and 42 (44.7%) indicated that the recommended duration for brushing should ideally be 2 minutes. Only 5 (5.3%) individuals among the participants were reported of smoking or using tobacco.

Regarding dental practices, 53 (56.4%) reported visiting a dental hygienist or dentist when faced with a specific dental problem. 18 (19.1%) recommended an annual dental visit, and only 7 (7.4%) preferred a six-month visit which is ideal. In response to the question about children's dental habits, 74 (78.7%) reported that their children engaged in brushing while they practiced brushing. A comparison of responses regarding oral health knowledge and practices based on age groups or gender among parents, early childhood educators, and healthcare professionals of young children indicated no statistically significant differences. However, a comparison based on profession and different roles, as reported in

Table 1, showed statistically significant differences. 100% of parents, 84% of early childhood educators, and 72.3% of HCPs indicated that the frequency of brushing should be twice daily. (p = 0.018). Similarly, 42.6% of HCPs agreed that seeing a dentist or dental hygienist once a year or every six months is a good approach compared to parents and ECD educators, who indicated that dental visits should be only when there is a dental issue. (p=0.024).

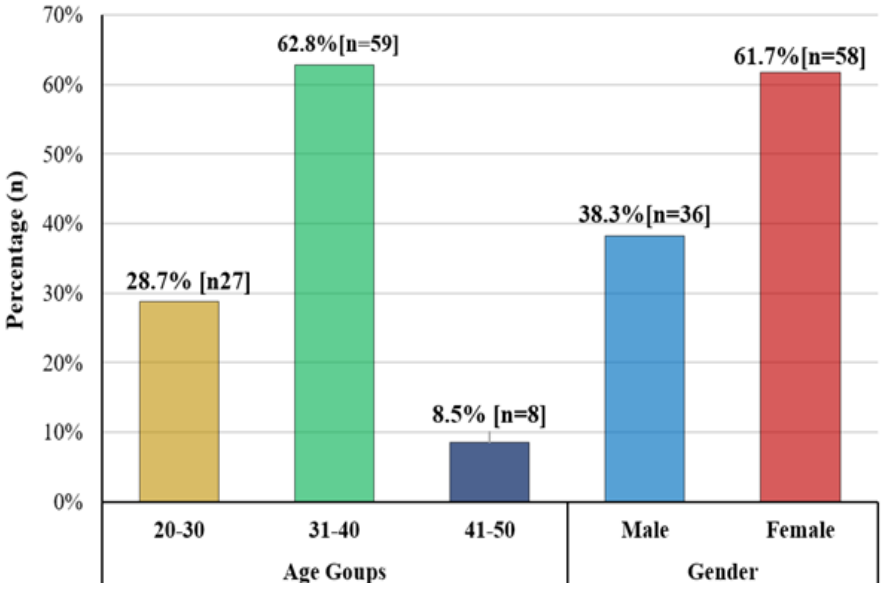

Fig. 1. Age and gender distribution of the participants (n=94)

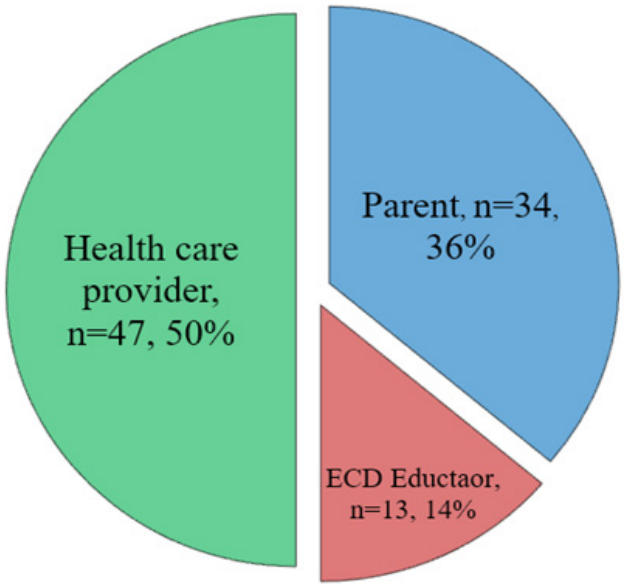

Fig. 2. Proportion of non-professional and professional parents

Table 1
Comparison of specific oral health practices adopted by early childhood caregivers across different roles and professions (n=94). *Significant at p<0.05

Oral Health Knowledge and Practices	Profession			P-Value
	Parents n=34	ECD Educator n=13	HCP n=47	
How often should a person brush his/her teeth?				
Once	0	0	3(6.4%)	0.018*
Twice	34(100%)	11(84.6%)	34(72.3%)	
Thrice	0	2(15.4%)	11(21.3%)	
For how long should we brush our teeth?				
Thirty sec	6(17.6%)	3(23.1%)	5(10.6%)	0.204
one min	8(23.5%)	4(30.8%)	13(27.7%)	
Two Mins	15(44.1%)	2(15.4%)	25(53.2%)	
Three Mins	5(14.7%)	4(30.8%)	4(8.5%)	
Do you use tobacco/Smoking?				
Yes	3(8.8%)	0	2(4.3%)	0.435
No	31(91.2%)	13(100%)	45(95.7%)	
How often do you visit the dentist or dental hygienist?				
Once a year	3(8.8%)	2(15.4%)	13(27.7%)	0.024*
Every six months	0	0	7(14.9%)	
Only when I have a problem.	23(67.6%)	8(61.5%)	22(46.8%)	
I don't visit the dentist	8(23.5%)	3(23.1%)	5(10.6%)	
Do your kids brush their teeth when you brush yours?				
Yes	29(85.3%)	11(84.6%)	34(72.3%)	0.318
No	5(14.7%)	2(15.4%)	13(27.7%)	

Discussion

This cross-sectional study showed an agreement among participants regarding the importance of early childhood oral care for the health and well-being of a child. This common and collective understanding of proper oral hygiene practices from early childhood aligns with the existing literature and research. The findings of the interventional study also supported the findings, which revealed that children's behavioral gains during early years were directly associated with their dental health (Adil et al., 2020; Yalçin & ÖZTÜRK, 2022). The findings were also congruent with a systematic review reporting that favorable oral health optimizes functions such as eating and speech and contributes to a positive self-image (Anil & Anand, 2017). This study found that oral health knowledge and practices were not statistically significant among the different age groups and genders; however, comparisons across different roles and professions showed statistical significance ($p > 0.05$). Similarly, a research study in Kuwait by Ashkanani and Al-Sane (2013) revealed that caregivers exhibited limited knowledge and adherence to practices concerning the oral health of preschool children.

A study done in Taiwan by Tang et al., (2014) reported that caregivers' oral hygiene practices were correlated with children's oral hygiene behavior, encompassing the frequency of tooth brushing. Children's dental hygiene behavior is linked to caregivers' inadequate oral hygiene practices and their level of knowledge (Tang et al., 2014). According to the present study, 78.7% of caregivers and children also brush their teeth and follow oral hygiene practices. Brushing frequency and duration are also important factors when considering oral health. The literature suggests that the primary caregiver influences a child's oral health. In a study from Hong Kong, only 13% of parents reported brushing twice or more than twice per day (Jiang et al., 2014). However, in a study from Taiwan, 61% of caregivers reported frequency or brushing twice daily, while in this study (84%) of caregivers believed they needed to clean their teeth twice a day (Hsieh et al., 2014).

Moreover, establishing preventive oral health habits in the early stages of life forms the basis for

lifelong dental well-being. Early dental visits offer a chance for comprehensive examinations and risk assessments, including evaluations of infant feeding practices, oral hygiene, fluoride exposure, and oral health education for parents and caregivers. Early interventions can enhance oral health outcomes and reduce future associated treatment costs (Schroth et al., 2016). Regarding the first childhood dental appointment, this study reported that nearly half (47%) participants agreed it should be by age one or when the first tooth appeared. In response to a similar question, a study from India reported that 60% of parents responded positively to their child's dentist or dental hygienist visit before age 2 (Sogi et al., 2016). The significance of caregivers in promoting oral health care for children has increased. Ensuring self- and children's oral health is crucial in preventing oral health issues and complications. Therefore, caregivers must be well-informed and comprehend the importance of proper oral hygiene (Alshunaiber et al., 2019).

CONCLUSION

The basis for adult oral health is established in the formative preschool years during which a child's oral health pattern and risk are determined. In early preventive and corrective oral interventions, caregivers who possess knowledge and have effective oral health practices play a crucial role; therefore, the knowledge and practices of caregivers are crucial. Maintaining self-good oral hygiene by caregivers correlates with children's oral hygiene practices.

Limitations

This study assesses the knowledge and practices of young children's caregivers in Pakistan regarding oral health. It was conducted with a diverse population of caregivers, including ECD educators, HCPs, and parents. Furthermore, it stratified to control the a priori confounders. This study's limitations include a small sample size compared to other international studies. Also, it was conducted in a single tertiary care hospital in Karachi, Pakistan, so it lacks generalizability.

Recommendations

Oral hygiene and healthcare, in general, are superficially under-prioritized in the Pakistani education system. Many educational institutions do not have visiting dental hygienists or officially designated nursing staff to regularly monitor children and their health indicators (Shah et al., 2011). The findings of this study show that there is a need for some policy implications in the milieu of health and education. One of the aspects pertinent to having a national policy enforced in all public and private schools is having a full-time nurse and visiting dental hygienists, pediatricians, and gynecologists in the school whose role should be to keep health records and periodically monitor the health indicators of the young children (Simmer-Beck et al., 2017). Secondly, a massive oral hygiene campaign is to be offered in various social media and community channels to promote understanding of oral health to the public. Accessibility of quality oral hygiene aids to be freely provided to the parents of young children living below the average economic standards (Goldberg et al., 2022).

The masses have acknowledged the role of dental hygiene in Pakistan, and hygienists have offered routine, door-to-door, center-based, and community-based dental hygiene services. The government should make a mandatory health education curriculum, ensure that all schools have components of dental and oral hygiene awareness in it, and make two to three sessions mandatory for parents' education regarding these. Teacher education curricula should also have components of dental and oral hygiene modules in the school settings. Above all, funds should be allocated to scale up oral health nationally.

Competing Interest

The authors had no competing interests.

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