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Assessment of Oral Hygiene Practices and Dental Caries Among Preschool Children in Msallata City

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تقييم ممارسات نظافة الفم وتسوس الأسنان لدى أطفال ما قبل المدرسة في مدينة مسلاتة

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Abstract:
Oral health is a fundamental component of children's overall health and well-being. Dental caries remains one of the most prevalent chronic diseases among preschool children worldwide despite being largely preventable. This study aimed to assess oral hygiene practices and evaluate their association with dental caries among preschool children aged 4–6 years in the Alqusbat district center of Msallata City, Libya. A cross-sectional study was conducted among 200 preschool children selected from kindergartens in the study area. Data were collected using a structured questionnaire that assessed oral hygiene practices, parental supervision, and dental attendance. Clinical oral examinations were performed according to the World Health Organization (WHO) criteria for dental caries assessment. The findings revealed that 43.5% of the children demonstrated good oral hygiene practices, whereas 56.5% exhibited poor oral hygiene practices. Most children reported brushing their teeth once daily (65%), while only 25% brushed twice daily. The prevalence of dental caries was 52%, and a considerable proportion of children had never visited a dentist (79%). Toothbrush and toothpaste were the most commonly used oral hygiene aids (81%). The results also indicated limited parental supervision and inadequate preventive dental care practices among many participants. The study concludes that dental caries remains a significant oral health problem among preschool children in Msallata City. Strengthening oral health education programs, promoting regular dental visits, and increasing parental involvement in children's oral hygiene practices are essential measures to improve oral health outcomes and reduce the burden of dental caries in this population.

Keywords: Oral Hygiene, Dental Caries, Preschool Children, Oral Health Practices, Parental Supervision, Libya.

الملخص:
تُعد صحة الفم جزءاً أساسياً من الصحة العامة والرفاهية لدى الأطفال. ويُعتبر تسوس الأسنان من أكثر الأمراض المزمنة انتشاراً بين أطفال ما قبل المدرسة على مستوى العالم، على الرغم من إمكانية الوقاية منه إلى حد كبير. هدفت هذه الدراسة إلى تقييم ممارسات نظافة الفم ودراسة علاقتها بتسوس الأسنان لدى أطفال ما قبل المدرسة الذين تتراوح أعمارهم بين 4

و6 سنوات في مركز منطقة القصبات بمدينة مسلاتة، ليبيا. أُجريت دراسة مقطعية شملت 200 طفل من أطفال ما قبل المدرسة تم اختيارهم من رياض الأطفال في منطقة الدراسة. جُمعت البيانات باستخدام استبيان منظم لتقييم ممارسات نظافة الفم، وإشراف الوالدين، وزيارات طبيب الأسنان. كما أُجريت فحوصات سريرية للفم وفق معايير منظمة الصحة العالمية (WHO)لتقييم تسوس الأسنان. أظهرت النتائج أن 43.5٪ من الأطفال لديهم ممارسات جيدة لنظافة الفم، في حين أظهر 56.5٪ ممارسات ضعيفة. وأفاد معظم الأطفال بأنهم ينظفون أسنانهم مرة واحدة يومياً (65٪)، بينما كان 25٪ فقط ينظفون أسنانهم مرتين يومياً. وبلغت نسبة انتشار تسوس الأسنان 52٪، كما أن نسبة كبيرة من الأطفال لم يسبق لهم زيارة طبيب الأسنان (79٪). وكانت فرشاة الأسنان ومعجون الأسنان أكثر وسائل العناية الفموية استخداماً (81٪). كما أظهرت النتائج محدودية إشراف الوالدين وعدم كفاية ممارسات الرعاية الوقائية لدى عدد كبير من المشاركين. وتلخص الدراسة إلى أن تسوس الأسنان لا يزال يمثل مشكلة صحية فموية مهمة بين أطفال ما قبل المدرسة في مدينة مسلاتة. لذا فإن تعزيز برامج التثقيف الصحي الفموي، وتشجيع الزيارات الدورية لطبيب الأسنان، وزيادة مشاركة الوالدين في العناية بصحة الفم لدى الأطفال، تعد من الإجراءات الضرورية لتحسين صحة الفم والحد من انتشار تسوس الأسنان في هذه الفئة.

الكلمات المفتاحية: نظافة الفم، تسوس الأسنان، أطفال ما قبل المدرسة، ممارسات صحة الفم، إشراف الوالدين، ليبيا.

Introduction

Oral health is an essential component of general health and plays a significant role in the physical, psychological, and social well-being of children. Maintaining good oral hygiene during early childhood is particularly important because oral diseases can negatively affect nutrition, growth, speech development, self-esteem, and overall quality of life [1,2].

Dental caries remains one of the most common chronic diseases affecting children worldwide despite advances in preventive dentistry and oral health promotion programs [3,4]. The disease is multifactorial in nature and results from the interaction of oral microorganisms, dietary habits, host susceptibility, and inadequate oral hygiene practices. The accumulation of dental plaque due to ineffective tooth cleaning increases the risk of enamel demineralization and subsequent caries development [5].

If left untreated, dental caries may lead to pain, infection, impaired mastication, premature tooth loss, increased treatment costs, and adverse effects on children's growth and development [6,7]. Furthermore, studies have shown that oral health conditions during early childhood may influence oral health outcomes later in life, emphasizing the importance of preventive measures at an early age [8].
The establishment of proper oral hygiene habits during childhood is considered one of the most effective approaches for preventing dental diseases. Regular tooth brushing with fluoride toothpaste, parental supervision, and routine dental visits are fundamental components of preventive oral healthcare. Parents play a crucial role in developing positive oral health behaviors and ensuring that children adhere to appropriate oral hygiene practices [9].

Previous studies conducted in different countries have reported considerable variations in oral hygiene practices and dental caries prevalence among preschool children. These variations may be related to socioeconomic status, parental education, accessibility of dental services, and community awareness regarding oral health [10,11]. Therefore, understanding local oral health behaviors and disease patterns is essential for developing effective preventive strategies and community-based oral health programs.

In Libya, information regarding oral hygiene practices and dental caries among preschool children remains limited, particularly in smaller communities. To the best of our knowledge, no previous study has specifically investigated this issue among preschool children in Alqusbat District Center, Msallata City. Therefore, the present study aimed to assess oral hygiene practices and determine their relationship with dental caries among preschool children aged 4–6 years. The findings may contribute to the development of targeted preventive programs and improve oral health outcomes among children in the local community.

Material and methods:

This cross-sectional study was conducted in Alqusbat District Center, Msallata City, Libya, between July and August 2021 to assess oral hygiene practices and their relationship with dental caries among preschool children aged 4–6 years. The study population consisted of children enrolled in kindergartens within the study area. A cluster random sampling technique was used to select four kindergartens, and a total of 200 preschool children who met the study criteria were included. Data were collected using a structured and pre-validated questionnaire designed to evaluate oral hygiene practices and related factors. The questionnaire was initially prepared in English and then translated into Arabic. A pilot assessment was carried out before data collection to ensure the validity and reliability of the questionnaire. Information obtained included demographic characteristics, tooth brushing frequency, methods of oral hygiene, parental supervision during tooth brushing, and history of dental visits. Clinical

oral examinations were performed according to the World Health Organization (WHO) criteria using a dental mirror and explorer under appropriate examination conditions. The presence or absence of dental caries was recorded for each participant. Participation in the study was voluntary, and informed consent was obtained from the parents or guardians of the participating children. All collected information was treated confidentially and used solely for research purposes. The collected data were coded, entered, and analyzed using appropriate statistical methods. Frequencies and percentages were calculated to describe oral hygiene practices and the prevalence of dental caries among the study participants.

Results and **Discussion**:

The study included 200 preschool children aged 4–6 years from Alqusbat District Center, Msallata City. Of the total participants, 117 (58.5%) were males and 83 (41.5%) were females. Assessment of oral hygiene practices revealed that 43.5% of the children demonstrated good oral hygiene practices, whereas 56.5% exhibited poor oral hygiene practices (Figure 1)**.**

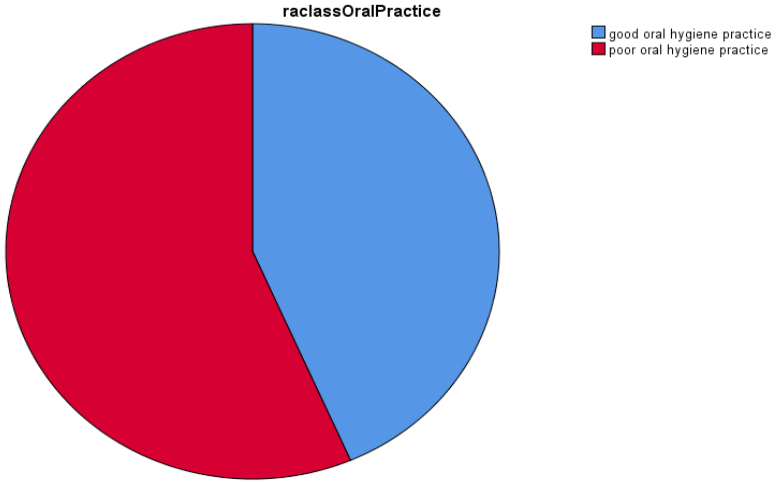

Figure (1): Distribution of oral hygiene practice of the participants

Regarding parents' evaluation of their children's oral health status, 48.5% reported that their children had very good oral health, 30% reported good oral health, 15.5% reported moderate oral health, 5% reported poor oral health, and 1% were uncertain about their child's oral health status (Table 1).

Table (1): The assessment of the Parents evaluation of their childrens oral health status

	NO	Percent%
Good	60	30%
very good	97	48.5%
Moderate	31	15.5%
Bad	10	5%
Don't Know	2	1%
Total	200	100%

The prevalence of dental caries among the study participants was 52%, while 48% of the children were free from dental caries. A higher prevalence of dental caries was observed among males compared with females (Figure 2 and Table 2).

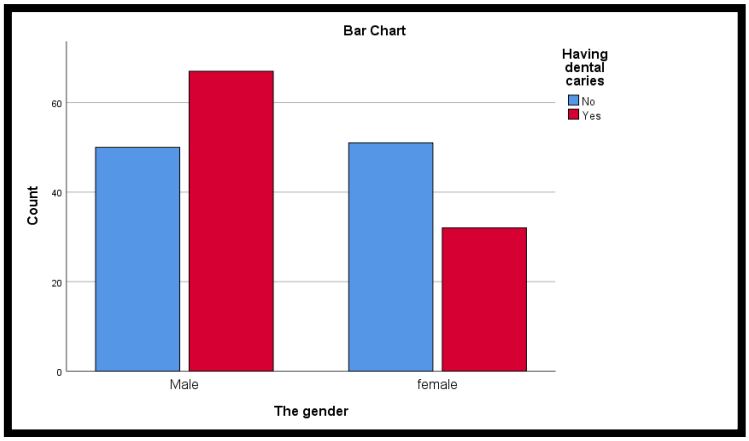

Figure (2): Prevalence of dental caries according to gender

Table (2): prevalence of dental caries among the children

	NO	Percent%
Yes	104	52%
No	96	48%
Total	200	100%

Analysis of tooth-brushing practices showed that 65% of the children brushed their teeth once daily, 25% brushed twice daily, and only 0.1% brushed more than twice daily. In contrast, 0.9% of the participants reported not brushing their teeth at all. Concerning oral hygiene methods, the majority of children (81%) used a toothbrush and toothpaste, while 10.5% used mouthwash and 3% used dental floss. Approximately 5.5% reported no regular oral hygiene practice (Table 3).

Parental involvement in children's oral hygiene practices varied considerably. About 46.5% of mothers supervised their children during tooth brushing, 23% of parents directly observed tooth brushing, 25% provided verbal instructions only, and 5.5% reported no involvement in supervising oral hygiene practices.

Regarding the age at which tooth brushing was initiated, 89% of children began brushing after the age of two years, whereas only 11% started brushing at or before two years of age. In addition, 80.5% of children reported receiving oral health advice from their kindergarten, while 19.5% had not received such advice.

Table (3): The Assessment of the children according to their oral hygiene habits

characteristic	Group	No	Percent %
Brushing Frequency Time / day	once	130	65%
	Twice	50	25%
	More than twice	2	1%
	Don't Clean	18	9%
Parental supervision Tooth brushing	Watch While brushing	46	23%
	Verbal advice only	50	25%
	Never Cared	11	5.5%
	Mother supervises	93	46.5%
Cleaning method	Toothbrush and toothpaste	162	81%
	Dental Floss	6	3%.
	Mouth wash	21	10.5%
	Never Cared	11	5.5%
Nursery advice in Tooth brushing	Yes	161	80.5%
	NO	39	19.5%
The age tooth brushing had been started	Two years old younger	22	11%
	After two years of old	178	89%

Assessment of dental attendance revealed that only 19% of children had previously visited a dentist, whereas 79% had never attended a dental visit and 2% of parents were uncertain about their child's dental attendance history (Table 4).

Table (4): The Assessment of the children that Visited a dentist

	NO	Percent%
Yes	38	19%
No	158	79%
Don't Know	4	2%

The reasons for dental attendance among children who had visited a dentist are presented in Figure 3.

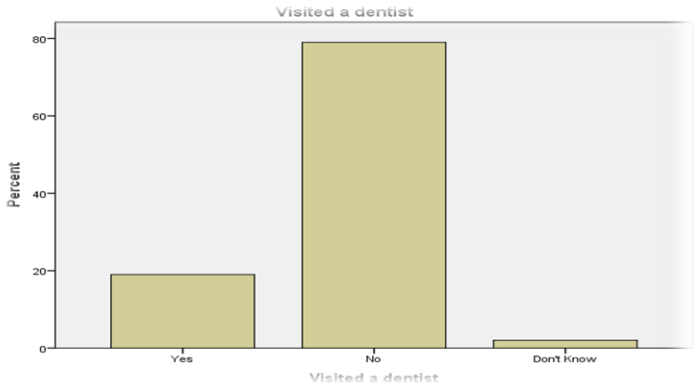

Figure (3): Reasons for dental attendance among children

Concerning oral health problems, 41% of participants had never experienced pain or problems involving their teeth or mouth. However, 29% reported such problems rarely, 21.5% reported them occasionally, and 8.5% experienced them most of the time (Table 5).

Table (5): The Assessment of the children that Experience pain or problem in teeth or mouth

	NO	Percent%
Never	82	41%
Rarely	58	29%
Most of time	17	8.5%
Sometimes	43	21.5%
Total	200	100%

Discussion:

The present study assessed oral hygiene practices and their association with dental caries among preschool children in Alqusbat District Center, Msallata City. The findings demonstrated that more than half of the children exhibited poor oral hygiene practices, indicating the need for greater attention to oral health promotion during early childhood. Since oral hygiene habits established during the preschool years often continue into later stages of life, improving these practices at an early age is essential for preventing future oral diseases [12].

The results showed that only 43.5% of the children had good oral hygiene practices. This finding is comparable to the prevalence reported among schoolchildren in Southwest Nigeria (44.8%) but lower than those reported in some studies conducted in India [13,14]. Differences between studies may be attributed to variations in parental awareness, socioeconomic conditions, accessibility of dental services, and oral health education programs.

Tooth brushing was the most common oral hygiene practice among the participants, with 65% of children brushing once daily and only 25% brushing twice daily. Although tooth brushing is widely recognized as the most effective method for plaque control, the proportion of children brushing twice daily remains below the recommendations of the American Academy of Pediatric Dentistry [15]. This finding may reflect inadequate parental supervision or limited awareness regarding optimal oral hygiene practices.

The majority of children used a toothbrush and toothpaste as their primary method of oral hygiene. However, the use of dental floss and mouthwash was relatively low. Similar findings have been reported

in previous studies, suggesting that oral hygiene practices among preschool children are often limited to basic tooth brushing without additional preventive measures [11,16].

Parental involvement plays a critical role in maintaining children's oral health. Although nearly half of the mothers supervised tooth brushing, a considerable proportion of parents provided only verbal instructions or no supervision at all. This may contribute to ineffective brushing techniques and inadequate plaque removal. Previous studies have emphasized the importance of parental guidance in establishing healthy oral hygiene behaviors and reducing the risk of dental caries among young children [17].

The prevalence of dental caries in the present study was 52%, indicating that dental caries remains a significant public health concern among preschool children in the study area. This prevalence is similar to that reported among preschool children in Egypt but higher than figures reported in some other populations [18,19]. The observed prevalence may be associated with insufficient oral hygiene practices, delayed initiation of tooth brushing, and limited utilization of preventive dental services.

A notable finding of this study was the low rate of dental attendance. Only 19% of children had previously visited a dentist, while the majority had never received professional dental care. Regular dental visits are essential for early detection and prevention of oral diseases. The low utilization of dental services observed in this study may reflect limited awareness among parents regarding the importance of preventive dental care, as reported in previous investigations [17,20].

The findings of this study highlight the need for comprehensive oral health promotion programs targeting both preschool children and their parents. School-based educational initiatives, parental awareness campaigns, and improved access to preventive dental services may contribute to better oral hygiene practices and a reduction in dental caries prevalence among children in the local community.

Conclusion:

The present study revealed that dental caries remains a common oral health problem among preschool children in Alqusbat District Center, Msallata City, with a prevalence of 52%. Although most children reported practicing tooth brushing, the overall oral hygiene practices were not optimal, and more than half of the participants demonstrated poor oral hygiene habits.

The findings also highlighted limited parental supervision of tooth brushing and a low rate of dental attendance among children, which may contribute to the persistence of dental caries. Therefore, improving parental awareness, encouraging proper oral hygiene practices from an early age, and promoting regular preventive dental visits are essential to enhance oral health outcomes among preschool children and reduce the burden of dental caries in the community.

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