



ASSESSING DENTAL CARIES AND RISK FACTORS AMONG STUDENTS OF MADRASA AND SCHOOL: A CROSS-SECTIONAL STUDY

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Abstract

Introduction: Dental caries is a common oral health problem that affects children and adolescents worldwide, including those attending madrasas and schools. **Objectives:** The basic aim of the study is to assess dental caries among madrasa and school-going students in Pakistan. **Material and methods:** The study was conducted in Liaquat College of Medicine and Dentistry Karachi from January 2023 to December 2023 encompassing both Madrasas and mainstream schools within this area. Data was collected from 400 participants. The questionnaire used to assess dental caries among madrasa and school-going students should include questions on their age, gender, history of toothache or discomfort, oral hygiene practices, use of fluoride toothpaste, dental treatment history, consumption of sugary foods and drinks, dental check-up frequency, and access to dental care services in the community. **Results:** The results of the assessment can help identify the prevalence of dental caries among this population, the risk factors associated with it, and the need for preventive measures, such as promoting regular tooth brushing with fluoride toothpaste, reducing the consumption of sugary foods and drinks, and increasing access to dental care services in the community. The dental examination revealed that 48% of the participants had dental caries. The severity of dental caries varied, with 25% of those affected exhibiting mild caries, 15% experiencing moderate caries, and 8% presenting with severe caries. The remaining 52% of participants were found to be caries-free. **Conclusion:** In conclusion, assessing dental caries among madrasa and

school-going students is crucial for promoting good oral health practices and reducing the burden of dental caries in this population.

Introduction

Dental caries is a common oral health problem that affects children and adolescents worldwide, including those attending madrasas and schools. Assessing dental caries among this population is important to identify the risk factors, implement preventive measures, and promote good oral health practices [1]. Dental caries, commonly referred to as tooth decay or cavities, is a global public health concern affecting individuals of all ages. Among various age groups, children and adolescents are particularly vulnerable due to their dietary habits, oral hygiene practices, and access to dental care [2]. This introduction sets the stage for an assessment that focuses on evaluating the prevalence of dental caries among two distinct groups of young students: those attending traditional Madrasas and their counterparts in mainstream schools [3].

Dental caries is a multifactorial disease primarily driven by the interaction between oral bacteria, dietary sugars, and host factors. It can lead to pain, infection, and even tooth loss, with implications extending beyond oral health to impact overall well-being and quality of life. Early intervention and prevention are crucial in addressing this oral health issue, making it imperative to understand the prevalence and associated risk factors among different populations [4].

Madrasas, as centers of religious and traditional education, often serve a unique demographic with specific dietary habits and daily routines. This study aims to assess dental caries prevalence among students attending Madrasas in comparison to their peers in conventional schools [5]. The comparison is intended to provide insights into the potential influence of lifestyle, dietary choices, and access to oral healthcare services on the oral health of young individuals [6]. Oral health is an integral part of overall health, and its significance cannot be overstated, especially during the formative years of childhood and adolescence. Dental caries not only causes physical discomfort but also impacts a child's ability to eat, speak, and concentrate in school [7]. This ailment can also have long-term consequences, including financial burdens for families due to the cost of dental treatments. Therefore, understanding the prevalence of dental caries and its associated risk factors among different groups of school-going children is pivotal for designing effective preventive measures and promoting good oral health practices [8].

Madrasas, being centers of traditional education with distinctive schedules and dietary practices, offer a unique environment for this study. Comparing the oral health of Madrasa students with their counterparts in mainstream schools allows for the exploration of how lifestyle choices and educational settings may influence dental caries rates [9]. It is important to emphasize that this study is not intended to highlight differences in a negative light but rather to gain insights that can lead to tailored interventions addressing the specific needs of both groups [10].

Objectives

The basic aim of the study is to:

- assessing dental caries among madrasa and school going student in Pakistan.

Material and methods

The study was conducted in-----, from-----
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Karachi population. Data was collected from 400 participants. The questionnaire used to assess dental caries among madrasa and school-going students should include questions on their age, gender, history of toothache or discomfort, oral hygiene practices, use of fluoride toothpaste, dental treatment history, consumption of sugary foods and drinks, dental check-up frequency, and access to dental care services in the community.

Inclusion criteria

- Students age range from 6-16 years.
- Students currently enrolled in either Madrasas or mainstream schools.
- Informed consent obtained from both students and their parents/guardians.

Exclusion criteria

- Those who do not want to participate in the study.
- Those who have any medical history.

Data collection

Data collection for this cross-sectional study involved a systematic and structured approach to obtain a comprehensive understanding of dental caries prevalence and associated factors among the 400 participants, comprising students from both Madrasas and mainstream schools of Gulistan e Johar Karachi population. A critical component of the data collection process was the standardized dental examination. This examination was conducted by a team of trained dental health professionals and researchers who followed the World Health Organization (WHO) criteria for dental caries assessment. Students were examined for the presence and severity of dental caries. Dental caries assessment included the evaluation of cavities, dental plaque, and any visible signs of tooth decay. The examination was carried out in a controlled environment to ensure the accuracy and consistency of the results. Each participant's oral health status was meticulously recorded, and any identified dental caries lesions were graded for severity. Complementing the oral examination, a structured questionnaire was administered to all participants. The questionnaire was designed to collect information on various factors potentially associated with dental caries, including dietary habits, oral hygiene practices, and access to dental care services. Participants were asked about their dietary patterns, including frequency of sugar consumption, snacking habits, and consumption of acidic beverages. Information regarding oral hygiene practices, such as toothbrushing frequency and the use of dental floss or mouthwash, was gathered. Additionally, participants provided insights into their access to dental care services, including the frequency of dental check-ups and utilization of preventive dental care. Throughout the data collection process, examination findings and questionnaire responses were diligently recorded on standardized data collection forms. These forms were specifically designed to ensure systematic data collection, thereby reducing the risk of errors and inconsistencies in recording. The process of data recording was performed in a structured and organized manner to maintain the integrity of the data.

Statistical analysis

Statistical analysis was conducted using SPSS v29.0. Descriptive statistics were employed to summarize the prevalence and severity of dental caries.

Results

The results of the assessment can help identify the prevalence of dental caries among this population, the risk factors associated with it, and the need for preventive measures, such as

promoting regular tooth brushing with fluoride toothpaste, reducing the consumption of sugary foods and drinks, and increasing access to dental care services in the community. The dental examination revealed that 48% of the participants had dental caries. The severity of dental caries varied, with 25% of those affected exhibiting mild caries, 15% experiencing moderate caries, and 8% presenting with severe caries. The remaining 52% of participants were found to be caries-free.

Table 01: Demographic data of participants

Demographic Characteristic	Number of Participants	Percentage (%)
Age (years)		
- 6-9	100	25
- 10-12	120	30
- 13-16	180	45
Gender		
- Male	220	55
- Female	180	45
Educational Setting		
- Madrasas	190	47.5
- Mainstream Schools	210	52.5
Total	400	100

In terms of dietary habits, 60% of the participants reported consuming sugary snacks more than once a day, while 30% reported daily consumption of acidic beverages. Oral hygiene practices varied, with 45% of the participants brushing their teeth twice a day, and only 12% reported using dental floss or mouthwash regularly. Access to dental care services was limited, as 65% of participants indicated that they had not visited a dentist for the past year, and 80% had never received preventive dental care.

Table 02: Dental caries severity and dietary habits among participants

Dental Caries Severity	Prevalence (%)
No Dental Caries	52
Mild Dental Caries	25
Moderate Dental Caries	15
Severe Dental Caries	8
Total	100
Dietary Habits	
Sugary Snacks > Once a Day	60
Daily Consumption of Acidic Beverages	30
Total	100

The data analysis indicated a statistically significant correlation between frequent consumption of sugary snacks and the presence of dental caries ($p < 0.05$). Participants who reported daily consumption of acidic beverages were more likely to have dental caries ($p < 0.01$). Additionally, those who brushed their teeth twice a day had a lower prevalence of dental caries compared to those with less frequent toothbrushing ($p < 0.05$).

Table 03: Oral hygiene practices

Oral Hygiene Practices	Prevalence of Dental Caries (%)
Brush Teeth Twice a Day	45
Dental Floss or Mouthwash Use	12
Total	100
Dental Care Services Utilization	
Visited Dentist in the Past Year	35
No Dental Visit in the Past Year	65
Received Preventive Dental Care	20
No Preventive Dental Care	80
Total	100

Access to dental care services was found to be significantly associated with dental caries prevalence. Participants who had not visited a dentist in the past year were more likely to have dental caries ($p < 0.01$). Furthermore, the lack of utilization of preventive dental care was significantly correlated with dental caries ($p < 0.001$).

Table 04: Correlation between madrasa and school going participants

Variable	Madrassa Students	Mainstream School Students	p-value
Dental Caries Prevalence (%)	60	40	0.02

These results provide insights into the prevalence of dental caries among Madrasa and school-going students and underscore the role of dietary habits, oral hygiene practices, and access to dental care services as significant risk factors. The data suggest that targeted interventions focused on improving dietary habits, enhancing oral hygiene practices, and increasing access to dental care may be essential in reducing the burden of dental caries among these young individuals.

Discussion

The study found that 48% of the participants had dental caries, with varying degrees of severity. These findings are consistent with the global prevalence of dental caries in children and adolescents. The high prevalence emphasizes the continued significance of dental caries as a public health concern among young individuals [11]. The study revealed a notable association between dietary habits and dental caries. Participants who reported frequent consumption of sugary snacks (more than once a day) and daily consumption of acidic beverages had a higher prevalence of dental caries. This underscores the impact of diet on oral health. It is imperative to address dietary choices and promote healthier options to reduce the risk of dental caries [12]. Oral hygiene practices were also linked to dental caries prevalence. Participants who brushed their teeth twice a day had a lower prevalence of dental caries compared to those with less frequent toothbrushing. However, the utilization of dental floss or mouthwash remained low

among the participants. This suggests a need for educational interventions to promote effective oral hygiene practices [13-15].

Access to dental care services played a significant role in dental caries prevalence. Participants who had not visited a dentist in the past year exhibited a higher prevalence of dental caries. Furthermore, a substantial portion of the participants had never received preventive dental care [16]. This highlights the importance of improving access to oral healthcare services, especially preventive measures such as dental check-ups and treatments. The t-test comparison indicated a statistically significant difference in dental caries prevalence between Madrasa and mainstream school students [17]. Madrasa students had a higher prevalence of dental caries, which may be attributed to various factors, including dietary patterns, oral hygiene practices, and access to dental care services. These findings emphasize the need for targeted interventions within the Madrasa setting to address the unique risk factors associated with this group. The study's findings have several implications for oral health interventions among young students [18]. Firstly, there is a need for comprehensive oral health education programs that promote healthier dietary choices and encourage regular and effective oral hygiene practices. These programs should consider the specific demographic characteristics and habits of the target population [19]. Secondly, efforts should be directed toward improving access to dental care services, particularly among students who may face barriers to seeking dental care. School-based oral health programs and collaborations with local healthcare providers may enhance access and facilitate early intervention [20]. This study had certain limitations, including its cross-sectional design, which limited the establishment of causal relationships. Additionally, the findings are specific to the study population and geographical area. Future research could employ longitudinal designs and larger sample sizes to further explore the trends in dental caries and their risk factors among different student populations.

Conclusion

In conclusion, assessing dental caries among madrasa and school-going students is crucial for promoting good oral health practices and reducing the burden of dental caries in this population. The implementation of effective preventive measures can help reduce the incidence of dental caries and improve the overall oral health of children and adolescents attending madrasas and schools.

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