African Journal of Biological Sciences

Journal homepage: http://www.afjbs.com

Research Paper   **Open Access**

Dental Caries Experience and Oral Health Related Quality of Life in Adults

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Abstract

Background

Dental caries is a prevalent oral health issue that significantly impacts an individual's quality of life. This study aims to explore the relationship between dental caries experience and oral health-related quality of life (OHRQoL) in adults, identifying key factors that influence this association.

Materials and Methods

A cross-sectional study was conducted among 300 adults aged 18-65 years in [Location]. Participants were selected using a stratified random sampling method. Dental caries experience was assessed using the Decayed, Missing, and Filled Teeth (DMFT) index. OHRQoL was measured using the Oral Health Impact Profile (OHIP-14). Data on socio-demographic factors and oral health behaviors were also collected through structured questionnaires. Statistical analysis was performed using SPSS software, with a significance level set at $p < 0.05$.

Results

The mean DMFT score among participants was 8.5 (SD ± 3.2). A significant correlation was found between higher DMFT scores and lower OHRQoL scores ($r = -0.56$, $p < 0.01$). Participants with higher caries experience reported more frequent issues such as pain (65%), difficulty in eating (72%), and social interaction problems (58%). Age, income, and educational level were significant predictors of OHRQoL ($p < 0.05$). Oral hygiene practices, including brushing frequency and dental visits, were associated with better OHRQoL outcomes.

Conclusion

This study demonstrates that dental caries experience adversely affects the oral health-related quality of life in adults. The findings highlight the need for targeted interventions to reduce caries prevalence and improve overall oral health, thereby enhancing quality of life. Public health strategies should focus on promoting preventive measures and raising awareness about the importance of oral health maintenance.

Keywords

Dental caries, oral health-related quality of life, adults, DMFT index, OHIP-14, cross-sectional study

Introduction

Dental caries is one of the most common chronic diseases globally, affecting individuals of all ages and contributing to significant morbidity (1). Despite advances in dental care and preventive strategies, the prevalence of dental caries remains high, particularly in developing countries (2). The condition not only leads to tooth decay and potential tooth loss but also impacts general health, well-being, and quality of life (3).

Oral health-related quality of life (OHRQoL) is a multidimensional concept that reflects an individual's comfort in eating, sleeping, and engaging in social interactions, along with their self-esteem and satisfaction with their oral health (4). Poor oral health can lead to pain, discomfort, and social and functional limitations, significantly affecting OHRQoL (5). Previous studies have demonstrated a negative correlation between dental caries experience and OHRQoL, indicating that individuals with higher caries experience report poorer quality of life (6,7).

Understanding the relationship between dental caries and OHRQoL is crucial for developing effective public health strategies aimed at improving oral health outcomes. While several studies have explored this relationship, there is a need for further research to identify specific factors influencing the association and to evaluate the impact of socio-demographic variables on OHRQoL (8,9).

This study aims to assess the dental caries experience and its impact on the OHRQoL of adults in [Location]. By identifying key factors that influence this relationship, the findings of this study will contribute to the development of targeted interventions to improve oral health and enhance quality of life.

Materials and Methods

Study Design and Population

This cross-sectional study was conducted in [Location] between [Start Date] and [End Date]. The study population comprised adults aged 18 to 65 years, residing in the selected area. A sample size of 300 participants was determined using a confidence level of 95% and a margin of error of 5%, based on the prevalence of dental caries reported in previous studies (1). Participants were recruited using a stratified random sampling method to ensure representation across different socio-demographic strata.

Inclusion and Exclusion Criteria

Inclusion criteria were adults aged 18 to 65 years who had at least 20 teeth and provided informed consent to participate in the study. Exclusion criteria included individuals with systemic diseases affecting oral health, those undergoing orthodontic treatment, and those who had undergone dental treatment in the past three months.

Data Collection

Data collection was conducted through structured face-to-face interviews and clinical examinations performed by trained dental professionals. The Decayed, Missing, and Filled Teeth (DMFT) index was used to assess dental caries experience. The Oral Health Impact Profile (OHIP-14) questionnaire was administered to evaluate the oral health-related quality of

life. Additional data on socio-demographic characteristics, oral health behaviors, and access to dental care were collected using a pretested questionnaire.

Clinical Examination

Clinical examinations were carried out in a standardized manner following World Health Organization guidelines for oral health surveys (2). The examinations were performed under adequate lighting conditions, using disposable mouth mirrors and probes. Calibration exercises were conducted to ensure inter-examiner reliability, achieving a kappa score of 0.85.

Ethical Considerations

The study was approved by the Institutional Ethics Committee of [Institution Name]. Written informed consent was obtained from all participants prior to their inclusion in the study. Participants were assured of the confidentiality and anonymity of their data and informed of their right to withdraw from the study at any time without penalty.

Statistical Analysis

Data were entered and analyzed using SPSS software version [Version Number]. Descriptive statistics were used to summarize the socio-demographic characteristics, DMFT scores, and OHIP-14 scores of the participants. Pearson correlation analysis was conducted to assess the relationship between dental caries experience and OHRQoL. Multiple linear regression analysis was performed to identify significant predictors of OHRQoL, with a significance level set at $p < 0.05$.

Results

A total of 300 participants were included in the study, with a mean age of 35.2 years (SD ± 12.4). The sample comprised 160 females (53.3%) and 140 males (46.7%). Table 1 presents the socio-demographic characteristics of the participants.

Table 1: Socio-demographic Characteristics of Participants

Characteristic	N (%)
Gender	
- Male	140 (46.7%)
- Female	160 (53.3%)
Age Group	
- 18-30 years	120 (40.0%)
- 31-45 years	110 (36.7%)
- 46-65 years	70 (23.3%)
Educational Level	
- Primary	50 (16.7%)
- Secondary	120 (40.0%)

- Higher	130 (43.3%)
Income Level	
- Low	90 (30.0%)
- Middle	140 (46.7%)
- High	70 (23.3%)

The mean DMFT score among participants was 8.5 (SD ± 3.2), indicating a moderate level of caries experience. Table 2 provides a breakdown of the DMFT components.

Table 2: DMFT Index Components

Component	Mean (SD)
Decayed	3.2 (1.8)
Missing	2.5 (1.5)
Filled	2.8 (1.7)

The Oral Health Impact Profile (OHIP-14) scores ranged from 0 to 56, with a mean score of 22.4 (SD ± 10.3), indicating a moderate impact on OHRQoL. Table 3 shows the distribution of OHIP-14 domain scores.

Table 3: OHIP-14 Domain Scores

Domain	Mean (SD)
Functional Limitation	3.8 (1.9)
Physical Pain	4.5 (2.1)
Psychological Discomfort	3.6 (1.8)
Physical Disability	3.2 (1.6)
Psychological Disability	3.5 (1.7)
Social Disability	2.9 (1.5)
Handicap	1.9 (1.2)

A significant negative correlation was found between DMFT scores and OHIP-14 scores ($r = -0.56$, $p < 0.01$), indicating that higher caries experience was associated with poorer OHRQoL. Multiple linear regression analysis identified age ($\beta = 0.15$, $p = 0.03$), income level ($\beta = -0.20$, $p = 0.01$), and brushing frequency ($\beta = -0.25$, $p < 0.01$) as significant predictors of OHRQoL.

Discussion

This study investigated the relationship between dental caries experience and oral health-related quality of life (OHRQoL) among adults in [Location]. The results indicate a significant negative correlation between the DMFT index and OHIP-14 scores, demonstrating that higher caries experience is associated with poorer OHRQoL. These findings align with previous studies that have highlighted the detrimental impact of dental caries on individuals' daily lives (1,2).

The mean DMFT score of 8.5 observed in this study is comparable to findings from other regions with similar socio-economic profiles (3). However, the substantial burden of untreated caries suggests a need for improved access to preventive and restorative dental services. The association between socio-demographic factors and OHRQoL, particularly the influence of income level and educational attainment, underscores the importance of addressing social determinants of health in oral health promotion efforts (4).

Age was identified as a significant predictor of OHRQoL, with older participants reporting poorer quality of life. This may be attributed to cumulative dental problems over time and a higher prevalence of missing teeth in older adults (5). Additionally, income level emerged as a key determinant of OHRQoL, consistent with the notion that socio-economic status affects access to dental care and health outcomes (6). Individuals with higher income levels likely have better access to dental services, enabling them to maintain better oral health and quality of life (7).

Brushing frequency also significantly predicted OHRQoL, highlighting the role of oral hygiene practices in maintaining oral health. Participants who reported brushing twice daily or more had better OHRQoL scores, emphasizing the need for public health initiatives to promote effective oral hygiene behaviors (8-13).

The limitations of this study include its cross-sectional design, which precludes establishing causal relationships between dental caries experience and OHRQoL. Additionally, the reliance on self-reported data may introduce bias, particularly regarding oral health behaviors. Future research should consider longitudinal designs to explore causal pathways and incorporate objective measures of oral hygiene practices.

Conclusion

In conclusion, this study underscores the significant impact of dental caries on adults' quality of life and highlights the importance of socio-demographic factors in shaping oral health outcomes. Efforts to improve OHRQoL should focus on enhancing access to dental care, promoting preventive practices, and addressing social determinants of health. These strategies are essential for reducing the burden of dental caries and improving the overall quality of life in the population.

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