

# Exploring Preventive Dentistry Awareness among Patients at Karary University Dental Clinic: A Cross-Sectional Study of 2022

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## Abstract

**Background:** Preventive dentistry plays a crucial role in maintaining optimal oral health and preventing dental diseases such as caries, periodontal disease, and oral cancer. Knowledge and awareness of preventive measures significantly influence patient behavior, improving oral health outcomes. This study aimed to assess the awareness of preventive dentistry practices among patients attending Karary University Dental Clinic in 2022. **Methods:** A descriptive cross-sectional study was conducted with 151 patients attending the dental clinics at Karary University. A structured questionnaire was used to evaluate participants' knowledge and attitudes regarding preventive dentistry practices. Descriptive and inferential statistical methods were employed for data analysis. **Results:** The majority of participants (54.7%) exhibited fair awareness of preventive dentistry, with 39.3% showing good awareness, 4.7% demonstrating poor awareness, and only 1.3% displaying excellent awareness. Awareness was significantly higher among females, individuals aged 19-40 years, and those with a university education. While most patients (90.4%) recognized the preventability of dental diseases, gaps in knowledge were evident regarding the use of preventive tools such as dental floss and the importance of regular dental checkups. **Conclusion:** This study highlights a significant variation in preventive dentistry awareness among patients at Karary University Dental Clinic. Despite general awareness of dental disease prevention, specific areas, such as the use of dental floss and understanding advanced preventive measures, require further attention. Targeted educational interventions, particularly for high-risk groups, are essential to improve preventive dental practices and ultimately enhance oral health outcomes.

**Keywords:** Preventive Dentistry, Oral Health Education, Patient Awareness, Dental Hygiene, Preventive Practices, Karary University, Dental Health Behaviors, Oral Disease Prevention.

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## 1. INTRODUCTION

Oral health is defined as a state of being free from chronic orofacial pain, oral cancer, oral infections, periodontal disease, tooth decay, tooth loss, and other conditions that limit an individual's ability to bite, chew, smile, and speak, as well as their psychosocial well-being (Peres *et al.*, 2020). It plays a fundamental role in overall health and quality of life, emphasizing the importance of prevention to maintain optimal oral health. Preventive dentistry refers to dental care that combines regular checkups with the development of good oral habits, such as brushing and flossing, to help protect against oral diseases. It encompasses measures taken by dental professionals, individuals, and communities to control disease, enhance host resistance, restore function, and maintain oral health (Watt *et al.*, 2021). The primary goal

of preventive dentistry is to avoid diseases entirely by employing strategies within frameworks that include levels of prevention and targeted approaches.

Levels of prevention are categorized into primordial, primary, secondary, and tertiary stages. Primordial prevention focuses on preventing the emergence or development of risk factors in populations where these factors have not yet appeared, with education being the primary intervention (Sheiham & Watt, 2020). Primary prevention involves actions taken before the onset of disease to eliminate the possibility of its occurrence, such as promoting good oral hygiene practices, maintaining a healthy diet, and reducing risk factors like smoking (Petersen *et al.*, 2021). Secondary prevention seeks to halt disease progression in its early

stages, preventing complications through interventions like reversing early dental caries, treating gingivitis before it advances to periodontitis, and addressing precancerous lesions to avoid oral cancer (Moynihan *et al.*, 2021). Tertiary prevention aims to reduce impairments and disabilities caused by advanced disease and includes rehabilitation measures to improve patients' quality of life (Glick *et al.*, 2021). Approaches to prevention include high-risk strategies targeting individuals with elevated risk factors and mass strategies that focus on public health initiatives benefiting the wider population (Haux *et al.*, 2022).

Oral diseases, including dental decay, periodontal disease, and oral cancer, are significant global public health problems due to their high prevalence and impact on quality of life (Kassebaum *et al.*, 2020). Preventive dentistry is the cornerstone of all dental specialties, including periodontics, pedodontics, orthodontics, and operative dentistry. A lack of preventive measures often results in more complex and costly treatments, such as restorations, periodontal therapy, extractions, and prosthetic solutions, which could have been avoided with timely interventions (Pitts *et al.*, 2021).

Preventive dentistry also plays a critical role in reducing the incidence and severity of oral cancer, a disease associated with high mortality rates. For instance, early identification and management of dysplastic tissues or smoking cessation can significantly reduce the risk of disease progression (Warnakulasuriya, 2021). Adequate knowledge about preventive practices strongly influences oral health outcomes by improving hygiene, promoting the use of preventive services, enabling early diagnosis of diseases, and ensuring adherence to medical advice (Baiju *et al.*, 2020). Conversely, insufficient knowledge and education lead to poor health outcomes and delayed care. Thus, educating patients about proper oral habits and raising awareness of preventive measures are essential responsibilities of oral health providers. Insufficient preventive education has been identified as a contributing factor to the high prevalence of dental and gingival diseases (Peres *et al.*, 2020).

Despite its importance, there is limited data on the awareness of preventive dentistry among patients attending Karary University Dental Clinic. This study aims to assess the level of awareness among these patients in 2022. A sample of 150 patients was selected using simple random sampling, with the sample size calculated based on the Yamane formula for a known population. The findings of this study will provide valuable insights into the gaps in awareness and inform strategies to enhance oral health education and preventive care.

## 2. MATERIAL AND METHODS

### 2.1 Study Design and Ethical Considerations

This descriptive cross-sectional clinical-based study was conducted to assess the awareness of preventive dentistry among patients attending Karary University Dental Clinic. Ethical clearance and approval for the study were obtained from the Faculty of Oral and Dental Medicine at Karary University. Verbal consent was secured from all participants after they were informed about the purpose of the study and assured that their information would remain strictly confidential, to be used solely for research purposes. The study adhered to the ethical principles outlined in the Declaration of Helsinki.

### 2.2 Study Population and Setting

The study population consisted of patients attending the dental clinics at Karary University, located in the Omdurman locality of Khartoum State, Sudan. The study was conducted across six dental clinics at the facility, including two surgery clinics, one prosthodontics clinic, one periodontics clinic, one pedodontics clinic, and one endodontics and restorative clinic, equipped with more than 60 dental chairs. These clinics cater to a diverse range of dental care needs, providing a suitable setting for evaluating patient awareness of preventive dentistry.

### 2.3 Study Duration

The study was conducted over a two-week period, from October 17 to October 31, 2022.

### 2.4 Sampling Technique

Participants were selected using a simple random sampling method. Patients visiting Karary University Dental Clinic during the study period were considered eligible, except for those in emergency situations, individuals with mental handicaps, and pediatric patients. These exclusions ensured that the study population represented a cognitively sound adult group capable of providing informed responses.

### 2.5 Sample Size Calculation

The sample size was determined using the Yamane formula for finite populations:

$$n = \frac{N}{1 + N(e^2)}$$

Where:

- $n$  = sample size
- $N$  = population size (estimated at 245 patients over the study duration)
- $e$  = margin of error (set at 0.05 for a 95% confidence level)

The calculation yielded:

$$n = \frac{245}{1 + 245(0.05^2)} = \frac{245}{1 + 0.6125} = \frac{245}{1.6125} \approx 151$$

Thus, the sample size included 151 patients.

## 2.6 Data Collection Technique and Tools

Data were collected through a structured questionnaire administered via face-to-face interviews. The questionnaire included a mix of open-ended and closed-ended questions designed to evaluate participants' awareness, attitudes, and practices related to preventive dentistry. The tool was developed based on existing literature and pretested for clarity and reliability before the study. Feedback from the pretest was incorporated to improve question phrasing and ensure comprehensibility for participants.

## 2.7 Data Analysis

The collected data were analyzed using the Statistical Package for Social Sciences (SPSS) software, version 26 (SPSS, Inc., Chicago, IL). Descriptive statistics were used to summarize the data, with categorical variables presented as percentages and frequencies, and continuous variables expressed as mean  $\pm$  standard deviation. Associations between variables

were assessed using the chi-square test, paired t-test, and analysis of variance (ANOVA) as appropriate. A p-value of  $\leq 0.05$  was considered statistically significant.

By combining robust sampling techniques, a well-structured questionnaire, and rigorous data analysis, this study aimed to provide valuable insights into the awareness of preventive dentistry among patients at Karary University Dental Clinic.

## 3. RESULTS

A total of 150 out of 151 questionnaires were completed by adult patients seeking dental care at Karary University Dental Clinic. The majority of participants were female (71.2%), with a mean age of 37 years. Most participants resided in Omdurman (60.3%), followed by Khartoum (22.6%), Bahri (11.6%), Al-Jazeera (4.8%), and the White Nile State (0.7%) as shown in figure (1).

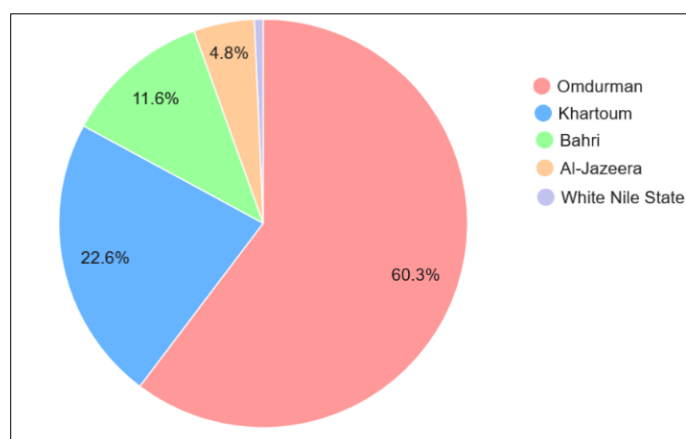


Figure 1: Distribution of Participants by Residential Area

Regarding educational levels, 48.6% of participants were university students, 24% had completed secondary school, 13% had completed primary school, 11.7% were illiterate, and 2.7% held

higher education degrees. Figure (2) shows the distribution of participants based on their education, with the majority being university students, followed by those with secondary school education, and others.

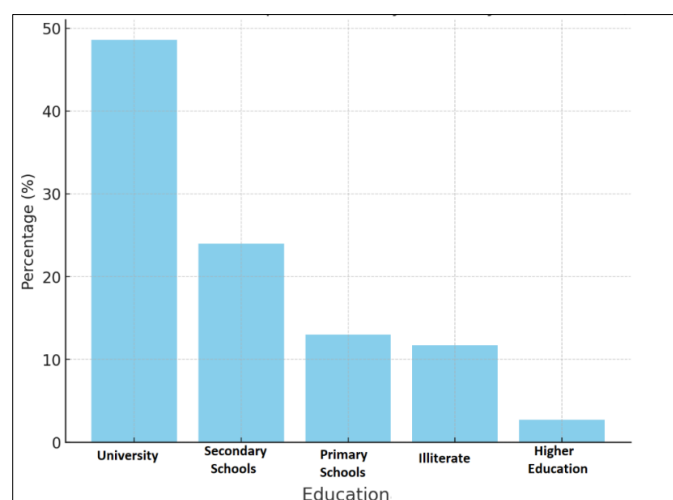
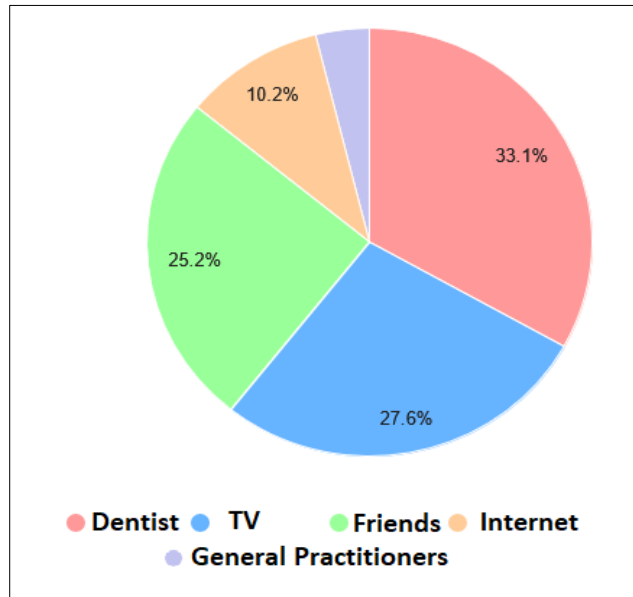


Figure 2: Educational Levels of Participants at Karary University Dental Clinic

A large proportion (90.4%) of participants were aware that dental diseases are preventable. Sources of information about preventive dentistry varied, with

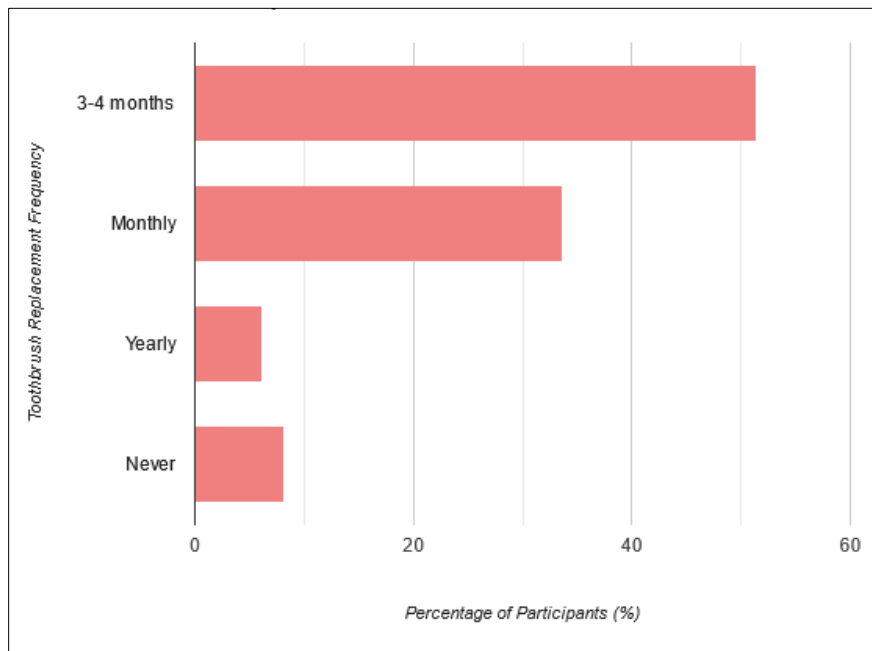
28.8% obtaining information from dentists, 24% from television, 21.9% from friends, 8.9% from the internet, and 3.4% from general medical practitioners.



**Figure 3: Distribution of Information Sources on Preventive Dentistry among Participants**

The results revealed gaps in oral hygiene practices. While 97.3% of participants reported using a toothbrush to clean their teeth, 85.6% did not use dental floss. Of those who brushed their teeth, 43.8% used a medium-bristle toothbrush, 41.1% used a soft-bristle toothbrush, and 14.4% used a hard-bristle toothbrush.

Frequency of tooth brushing varied, with 47.9% brushing twice a day, 32.9% brushing once a day, and 18.5% brushing three times a day. Approximately 51.4% of participants reported replacing their toothbrush every three to four months, 33.6% replaced it monthly, 6.2% replaced it yearly, and 8.2% never replaced their toothbrush (Figure 4).



**Figure 4: Frequency of toothbrush replacement among participants**

In terms of brushing techniques, 60.3% brushed in a horizontal motion, 16.4% used a vertical motion, 15.8% used a circular motion, and 6.2% used other

methods. While 56.2% of participants believed morning was the best time to brush, 30.8% preferred nighttime

brushing, and 11.6% brushed both in the morning and evening.

When asked about visiting the dentist, 49.3% reported visiting only when they experienced pain, while 32.3% understood the importance of biannual dental checkups.

When assessing the knowledge about dietary and behavioral risks was high among participants. A total of 86.3% recognized sweets as the most cariogenic food, and 92.4% acknowledged that smoking, tobacco use, and alcohol consumption negatively impact oral health. Interestingly, 58.9% of participants believed that males are at a higher risk of developing oral diseases than females.

Regarding brand preferences, 71.9% of participants used Signal toothpaste, 15.8% used Abowarda, and 12.3% used Close-Up toothpaste.

This study highlights the strong awareness of dental disease prevention among patients but underscores the need for further education on optimal oral hygiene practices, including the use of dental floss and regular dental visits.

#### 4. DISCUSSION

The primary objective of this study was to evaluate awareness about preventive dentistry among patients visiting Karary University Dental Clinic in 2022. The mean age of participants was 37 years, and the majority were female (71.2%).

Among 150 patients, 54.7% demonstrated fair awareness of preventive dentistry, 39.3% exhibited good awareness, 4.7% showed poor awareness, and only 1.3% exhibited excellent awareness. These findings align partially with previous studies, such as one by Salwa A. AlSadhan *et al.*, which highlighted the varying levels of dental awareness in populations (Salwa A. AlSadhan *et al.*, 2020).

A significant 90.4% of participants acknowledged that dental diseases are preventable, emphasizing the importance of educational interventions. This corresponds with similar findings from Wahengbam *et al.*, (2020), which stress the role of public knowledge in oral health prevention.

Regarding oral hygiene habits, 97.3% used toothbrushes, with 43.8% preferring medium bristles, 41.1% opting for soft bristles, and 14.4% choosing hard bristles. These preferences are consistent with research by Blaggana *et al.*, (2020), which explored similar trends in secondary school children.

In terms of frequency, 47.9% brushed twice daily, 32.9% once daily, and 18.5% three times daily. However, results differ from Al-Qahtani *et al.*, (2022),

who reported that most participants brushed only once daily. This discrepancy may stem from differences in age groups and consequent knowledge variations.

Knowledge regarding toothbrush replacement was variable: 51.4% replaced their toothbrushes every three months, 33.6% every month, and 6.2% annually, while 8.2% never replaced them. These findings differ from those in Blaggana *et al.*, (2020), which reported lower adherence to recommended replacement intervals.

The use of dental floss was notably low, with 85.6% of participants not utilizing this preventive tool. These findings align with Blaggana *et al.*, (2020), which also highlighted poor flossing habits in similar cohorts.

Interestingly, 49.3% of participants reported visiting the dentist only when experiencing pain, while only 32.3% knew that biannual dental visits are recommended. These results are consistent with studies by Jamjoom *et al.*, (2021), which emphasize the need for regular dental visits as a preventive measure.

When examining dietary habits, 86.3% were aware of the negative impact of sweets on dental health, and 92.5% recognized the adverse effects of smoking and alcohol on oral health. These findings echo those of AlSadhan *et al.*, (2020), which reported similar levels of awareness.

Lastly, the prevalence of participants who knew that fluoride prevents dental caries was 19.2%, and only 8.2% were aware of fissure sealants. These low awareness levels highlight the need for better education on preventive measures, consistent with the findings of AlSadhan *et al.*, (2020).

The primary sources of dental health information were dentists (28.8%) and television (24%), reinforcing the critical role of healthcare professionals and media in disseminating knowledge.

#### 5. CONCLUSION

The study highlights the varying levels of awareness about preventive dentistry among patients attending Karary University Dental Clinic in 2022. The majority of participants (54.7%) exhibited fair awareness, followed by 39.3% with good awareness, 4.7% with poor awareness, and only 1.3% demonstrating excellent awareness. The findings suggest a significant gap in comprehensive knowledge of preventive dentistry, emphasizing the need for targeted educational interventions.

The most knowledgeable patients were predominantly female, aged between 19 and 40 years, and possessed a university-level education. These demographics reflect the influence of age, gender, and educational attainment on awareness levels. Despite a generally fair level of awareness, specific deficiencies,

such as low understanding of the role of fluoride and fissure sealants, were evident. Additionally, the infrequent use of preventive tools like dental floss and irregular dental visits underline the necessity for behavior-oriented awareness programs.

The results emphasize the importance of promoting preventive dentistry through community-based initiatives, educational campaigns, and regular patient engagement at dental clinics. Addressing these gaps can contribute to improved oral health outcomes, reduce the prevalence of dental diseases, and enhance overall quality of life. This study underscores the critical need for ongoing efforts to enhance knowledge and practices related to preventive dentistry within diverse patient populations.

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