International Journal of Environmental Sciences
ISSN: 2229-7359
Vol. 11 No. 21s, 2025
https://www.theaspd.com/ijes.php

Bridging the Gap Between Knowledge and Practice: Oral Health Awareness in Adults at a Riyadh Tertiary Hospital

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Abstract
Background: Preventive dentistry remains essential for sustaining oral health, yet uneven knowledge and variable practices continue to challenge communities globally.
Objective: This study aimed to evaluate oral health knowledge, attitudes, and preventive behaviors among adult attendees of dental clinics within a tertiary hospital in Riyadh, Saudi Arabia.
Methods: From March to June 2025, a structured descriptive cross-sectional survey was carried out, enrolling 384 adult patients through systematic random sampling. Data were gathered via a pre-validated questionnaire assessing sociodemographic variables, oral health knowledge, attitudes toward prevention, and reported preventive practices. Results were summarized using descriptive statistics and differences were tested using chi-square analysis.
Results: A substantial 78.1% of respondents correctly identified fluoride as caries preventive, and 84.9% valued regular dental reviews. However, only 41.4% recognized gum bleeding as an early periodontal warning. Although 86.7% endorsed the importance of preventive visits, only 48.4% adhered to an annual check-up schedule. Higher educational attainment and being female correlated with improved knowledge scores ($p < 0.05$).
Conclusion: The adult population in Riyadh exhibits a sound general awareness of preventive oral health; nevertheless, significant deficits in periodontal disease identification and adherence to preventive visits persist. Tailored educational interventions are essential to translate knowledge into regular preventive practice.
Keywords: *oral health awareness, preventive dentistry, Riyadh, Saudi Arabia, periodontal disease, dental public health.*

INTRODUCTION

Oral health goes beyond aesthetics; it is a foundational aspect of complete health and daily living. Neglected mouths can trigger more than cavities and gum trouble; they can influence diabetes, heart disease, and risky pregnancies. The good news is that these problems are largely avoidable. Daily brushing, flossing, and routine dental visits are easy habits that can keep bigger health concerns at bay.

In Saudi Arabia, oral disease continues to pose a serious challenge, even with better healthcare access. National and local surveys show that knowledge, attitudes, and preventive actions are still uneven (AlSadhan et al., 2017; AlJasser et al., 2023). Cultural beliefs, health literacy, and how oral health education is presented all play a part in these persistent gaps.

Riyadh, as the capital and home to major tertiary hospitals, is an ideal place to study the issue. These hospitals see a wide-ranging patient mix, from educated city workers to rural visitors who need specialized treatment. This mix allows us to see if preventive oral health messages are reaching everyone. If they are not, the city's diverse patient base helps pinpoint where the communication fails.

Preventive dentistry remains the most economical strategy for lessening the global burden of oral diseases, yet its efficacy depends on public knowledge and the persistent incorporation of beneficial daily practices (Farsi et al., 2020). Within Saudi Arabia, the existing literature lacks comprehensive, recent evaluations of adult awareness levels, particularly in the context of tertiary care and specifically in Riyadh. Pinpointing these knowledge shortfalls is essential for crafting focused educational programs, enhancing patient outcomes, and curtailing prolonged healthcare expenditures.

This study, therefore, sets out to evaluate the knowledge, attitudes, and preventive practices related to oral health among adult patients visiting dental clinics at a tertiary hospital in Riyadh. By mapping both the strengths and weaknesses of current awareness, the outcomes will inform the design of future public health campaigns and the refinement of oral healthcare services across the Kingdom.

LITERATURE REVIEW

Preventive dentistry is built on the straightforward fact that it's far easier, more affordable, and less uncomfortable to avoid oral diseases than to cure them once they develop. The World Health Organization underscores that successful prevention relies on the general public understanding the issues, having the appropriate health literacy, and consistently undertaking healthy oral-care routines. In Saudi Arabia, while substantial funding has been directed toward dental services, multiple studies show persistent shortcomings in knowledge and behavior across various ages and socioeconomic strata.

Awareness Among Adults

A cross-sectional survey conducted in Riyadh determined that, although a large majority of adults knew dental caries could be averted, misunderstandings regarding the best preventive actions were still widespread (AlSadhan et al., 2017). Respondents acknowledged the necessity of brushing and flossing, yet a significantly smaller proportion appreciated the protective effect of fluoride or the value of scheduling regular professional examinations.

University Students and Young Adults

Young adults merit special attention, since the behaviors they adopt tend to shape lifelong habits. A study of university students in Jeddah found that female respondents and those who had received explicit counsel from their dentists exhibited superior oral health knowledge and more conscientious practices (Farsi et al., 2020). Nevertheless, uncertainties continued, particularly concerning the early indicators of periodontal disease.

Parents and Caregivers

Parents develop preventive oral health attitudes that often guide the habits and choices of their children. Research conducted in Riyadh among fathers found that while they generally endorsed preventive dental care, their actual use of preventive services was disappointingly low (Almalki et al., 2021). Such a gap between belief and practice indicates that mere awareness never suffices; practical challenges—such as cost, scheduling conflicts, and the absence of acute pain—frequently prevent families from acting on their good intentions.

Healthcare Professionals' Knowledge

Surprisingly, knowledge deficiencies extend beyond the general public. Research at King Fahad Medical City in Riyadh uncovered considerable variability in healthcare professionals' grasp of preventive oral health strategies (Baseer et al., 2012). These inconsistencies underscore the urgency of interprofessional education initiatives that equip all disciplines with a unified, evidence-driven oral health narrative, thereby minimizing mixed signals in the care continuum.

Impact of Dental Visits

The regularity and quality of dental visits further shape oral health outcomes. A national investigation showed that people who attended appointments on a routine basis demonstrated greater oral health awareness. Yet the same study found that many individuals approached dental clinics only after experiencing pain (Linjawi et al., 2019). Such a predominantly reactive orientation reduces the advantages that preventive strategies can offer over time.

Synthesis of Evidence

The reviewed literature reveals that awareness of dental health issues differs according to age, educational attainment, and previous dental care experiences, yet familiarity with the information does not automatically translate to improved behavior. Persistent obstacles include lingering misperceptions, economic limitations, and the absence of long-term, purpose-driven education interventions. Additionally, the literature lacks contemporary surveys targeting adult patients within Riyadh's tertiary hospitals, highlighting the need for focused, original inquiry in this critical population.

METHODOLOGY

Study Design and Setting

This investigation followed a descriptive cross-sectional framework and was carried out within the dental outpatient clinics of a tertiary care hospital located in Riyadh, Saudi Arabia, from March through June 2025. The facility caters to a heterogeneous patient base drawn from the Riyadh metropolitan area and surrounding rural districts.

Study Population and Sampling

The focus population comprised adult individuals aged 18 years and older presenting at the outpatient dental clinics during the study interval. The criteria for participation included: Saudi citizenship, proficiency in Arabic

or English sufficient for comprehension, and consent to join the study. Individuals with cognitive deficits or those receiving emergency dental interventions were systematically excluded.

A general cohort of 384 adults was assembled through systematic random sampling. Out of the daily roster, every third patient meeting the eligibility criteria was invited to participate, continuing until the target sample size was fulfilled. The sample size derivation assumed a 50% preliminary prevalence of sufficient oral health knowledge, a confidence coefficient of 1.96, and a tolerable sampling error of 5%.

Data Collection Tool

Information was gathered with a structured, self-administered questionnaire modified from already validated tools (AlSadhan et al., 2017; Farsi et al., 2020). The final instrument included four sections:

- Demographics—age, gender, education, occupation, monthly income.
- Oral Health Knowledge—questions concerning dental caries aetiology, the function of fluoride, and the advantages of routine dental visits.
- Attitudes—respondents' beliefs regarding the value of oral hygiene and preventive care.
- Practices—self-reported frequencies of tooth-brushing, flossing, dental visits, and mouthwash use.

A pilot test with twenty patients confirmed that the items were clear and culturally suitable, leading to only minor revisions.

Data Collection Procedure

Trained dental interns approached qualifying patients in the waiting area, explained the study's purpose, and secured written informed consent. The same interns then handed the questionnaire to each participant, who completed it while waiting for the clinical appointment. Help with reading or explanation of items was offered as needed. The average completion time was 10–12 minutes.

Data Analysis

Data were entered and analyzed with SPSS version 27 (IBM Corp., Armonk, NY, USA). Descriptive statistics summarized participant demographics and awareness levels. To investigate associations between demographic variables and oral health knowledge, attitudes, and practices, chi-square tests were conducted. A significance threshold of $p < 0.05$ was employed.

Ethical Considerations

Approval for ethical conduct was secured from the hospital ethics committee. Participation was entirely voluntary, with no direct personal identifiers requested. All data were stored confidentially and were limited to research use only.

RESULTS

Participant Characteristics

The final sample comprised 384 adults, averaging 34.8 years (± 10.9 years). There was a modest female predominance, with women accounting for 54.4% and men for 45.6%. Over sixty-two percent (62.5%) of respondents reported holding a university degree, and a substantial 71.1% stated that their monthly household income exceeded 8,000 SAR.

Table 1. Demographic Characteristics of Participants (n = 384)

Variable	Category	Frequency (n)	Percentage (%)
Gender	Male	175	45.6
	Female	209	54.4
Age Group (years)	18–29	126	32.8
	30–44	169	44.0
	45 and above	89	23.2
Education Level	High school or less	91	23.7
	University	240	62.5
	Postgraduate	53	13.8
Monthly Income (SAR)	<8,000	111	28.9
	≥8,000	273	71.1

Oral Health Knowledge

In summary, nearly eight out of ten participants recognized that fluoride plays a role in preventing dental caries, and just over four-fifths understood that routine dental check-ups lower the chances of oral disease. Nevertheless, fewer than half—41.4%—knew that bleeding gums when brushing can be an early indicator of periodontal disease.

Table 2. Distribution of Knowledge Scores

Knowledge Item	Correct n (%)
Fluoride prevents dental caries	300 (78.1)
Regular check-ups prevent oral diseases	326 (84.9)
Sugary snacks increase caries risk	355 (92.4)
Gum bleeding is an early sign of periodontal disease	159 (41.4)
Mouthwash can be part of daily oral hygiene	282 (73.4)

Attitudes Toward Preventive Dentistry

The vast majority of respondents—86.7%—recognize that scheduling preventive dental visits matters, even in the absence of noticeable symptoms. More than two-thirds, 67.4%, also equate the significance of oral health with that of overall general health. Nevertheless, a noteworthy minority, 22.1%, still maintains that a dental appointment is warranted only in the presence of discomfort or pain.

Table 3. Attitudes Toward Oral Health and Prevention

Statement	Agree n (%)
Preventive dental visits are important even without symptoms	333 (86.7)
Oral health is as important as general health	259 (67.4)
Dental visits are only necessary when in pain (negative attitude)	85 (22.1)
Good oral hygiene improves quality of life	346 (90.1)

Oral Health Practices

Almost all participants—91.9%—said they brushed their teeth every day, yet only 38.0% used floss daily. Annual dental check-ups were reported by 48.4% of them, whereas 51.6% said they only went to the dentist when something hurt.

Table 4. Self-Reported Oral Health Practices

Practice	Frequency n (%)
Brushes teeth twice daily	353 (91.9)
Uses dental floss daily	146 (38.0)
Uses mouthwash daily	202 (52.6)
Visits dentist annually for check-up	186 (48.4)
Visits dentist only when in pain	198 (51.6)

Association Between Demographics and Knowledge Scores

The chi-square tests indicated that improving education level consistently correlated with increased oral health knowledge ($p < 0.001$). Female participants outperformed males on knowledge measures ($p = 0.02$). Income category, however, did not show a statistically significant relationship with knowledge scores ($p = 0.14$).

DISCUSSION

This investigation examined knowledge, attitudes, and preventive actions regarding oral health among adults seeking care in a Riyadh tertiary dental facility. Data showed a generally solid understanding in certain domains,

yet significant weaknesses persisted—especially in identifying initial gum disease indicators and in habitually practicing daily flossing and timely dental visits.

When placed alongside older investigations, our result that more than 75% of respondents acknowledged fluoride's protective effect corresponds with previous Riyadh surveys that also identified high preventive awareness (AlSadhan et al., 2017). The comparable recognition of the need for routine dental visits parallels work from Jeddah, where students exposed to hygienist-led counseling achieved superior preventive scores (Farsi et al., 2020).

Yet the modest 41.4% identification of gum bleeding as an early periodontal warning exposes a critical knowledge void, reflecting similar results from Abha that revealed low awareness of gum health markers (Al-Qahtani et al., 2020). Clinically, such delayed recognition risks late presentations and, consequently, the escalation of treatment complexity.

Attitudes vs. Practices

Most respondents held a positive view of preventive dentistry: nearly 87 percent affirmed the value of check-ups even in the absence of symptoms. However, this conviction seldom shaped actual behavior. Only about half the sample completed annual visits, and a majority sought care exclusively during episodes of pain. This "reactive" approach recurs across the Saudi oral health literature (Linjawi et al., 2019).

The divide may stem from practical challenges: busy schedules, the cost of treatment, and lingering doubts about the need for preventive appointments. For instance, Almalki et al. (2021) documented Riyadh parents who endorsed the concept of preventive care yet often defaulted to treating symptoms, driven by a hierarchy of daily responsibilities (Almalki et al., 2021).

Demographic Influences

Analysis showed education level and gender to be significant predictors of knowledge scores. Females and participants with higher educational attainment outperformed their counterparts. This finding aligns with previous Saudi work (Baseer et al., 2012) and reinforces the need for public health communications that directly engage less-educated groups and that respect local cultural contexts.

Strikingly, we found no clear link between income level and knowledge in our sample. This points to the possibility that gaps in awareness hinge more on how information is distributed and the overall ability to process it than on economic standing alone.

Implications for Public Health and Clinical Practice

These results highlight the value of crafting direct, actionable education initiatives centered on periodontal disease, the critical role of professional cleanings, and the advantages of preventive care. Embedding oral health messaging within standard care pathways at tertiary hospitals can engage individuals who seldom enter dental clinics, thus extending the reach of preventive counseling.

Teams might also incorporate concise, in-the-chair teaching moments, given that studies show information delivered by dental professionals tends to steer patients toward healthier behaviors (Farsi et al., 2020).

Strengths and Limitations

The principal strength of our work lies in its enrollment of patients from a major tertiary hospital in Riyadh, thereby capturing the perspectives of residents from both the city and surrounding rural areas. This blended sample enriches the findings. Yet the cross-sectional nature of the data prevents causal inferences, while reliance on patients to report their own practices opens the door to social desirability bias. Finally, since we operated within a single facility, the results may not represent all patients in Riyadh or across the wider Kingdom of Saudi Arabia.

CONCLUSION

This research indicates that adult patients at a tertiary hospital in Riyadh largely demonstrate sound awareness of certain preventive oral health measures; however, notable weaknesses persist—especially in identifying preliminary symptoms of periodontal disease and in converting favorable attitudes into steady preventive habits. Literacy and gender appeared to shape knowledge, underscoring the necessity for more tailored communication efforts. Elevating patient education, weaving oral health promotion into everyday medical practice, and reinforcing the importance of consistent check-ups may encourage a transition from reactive to preventive care, thereby enhancing oral health results across Saudi Arabia.

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