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Dental Hygiene Health in Saudi Arabia: Assessing Public Awareness, Practices, and the Impact of Healthcare Policy

Nawaf Hawas Alharbi, Nawaf Muhnis Almutairi , Shafi Mouteran Aldfiri, Aref Malfi Aldfiri, Sultan Saleh Saad Alanazi , Tala Dawas Alharbi, omer sehmi alsmiri ,sultan saud mohammad alshammari, amal mayouf alshamari Eman Kharbush Hazza Al Dhafiri, ghuzayyil saad atan Almutairi, Afaf mater aldhafeeri , Najah hawas tala Alharbi, Latifah Mater Aldhafeeri, Dalal hawas tala Alharbi ,Falah hawas tala Alharbi, Eman Hameed Hindi aldhafeeri ,Fatima hizam alanazi ,Huda ali alshammri ,Wajid hamdi modi alanazi

Ministry of Health of Saudi Arabia

Abstract

Dental hygiene plays a crucial role in overall health, yet it remains a neglected aspect of many public health initiatives. This study examines the state of dental hygiene in Saudi Arabia by assessing public awareness, common practices, and the influence of healthcare policies. Utilizing a mixed-method approach, data was collected through surveys of 1,000 participants and interviews with 20 healthcare professionals.

Findings indicate notable disparities between urban and rural populations, with urban residents demonstrating higher awareness (85%) and better oral hygiene practices, such as brushing twice daily (75%), compared to rural counterparts (60% awareness, 55% brushing). Key barriers, particularly in rural areas, include financial constraints, limited awareness, and restricted access to dental care. Statistical analysis reveals a strong correlation between awareness and certain practices, such as annual dental visits (**r = 0.72, p = 0.005**), though weaker associations exist for behaviors like flossing.

Policy evaluation highlights a healthcare system primarily centered on treatment rather than prevention. While dental service accessibility is generally rated high, preventive initiatives receive minimal attention. This study underscores the urgent need for comprehensive policy reforms, enhanced public education, and targeted outreach programs to improve oral health outcomes. Recommendations include integrating dental hygiene education into school curricula, subsidizing preventive care, and expanding access to dental services in underserved regions.

Keywords: Dental Hygiene, Public Awareness, Oral Health Practices, Healthcare Policy, Saudi Arabia, Preventive Care, Public Health Disparities

Introduction

The Importance of Dental Hygiene

Dental hygiene is a fundamental aspect of overall health and well-being, directly influencing both oral health and quality of life (Mariotti & Hefti, 2024). Proper oral care helps prevent common dental issues such as cavities, gum disease, and bad breath while also lowering the risk of systemic conditions like diabetes and cardiovascular diseases (Genaro et al., 2024). Despite its significance, dental hygiene often remains overlooked in public health discussions, particularly in developing and emerging economies (Parmar et al., 2016).

Dental Hygiene in Saudi Arabia

Saudi Arabia has made significant strides in healthcare over recent decades, driven by substantial investments and policy reforms (Alam et al., 2022). However, dental hygiene remains a pressing concern. Rapid urbanization, evolving dietary habits, and a lack of widespread awareness about preventive care have contributed to a rising prevalence of oral health issues. Research indicates that dental caries and periodontal diseases are common across various age groups in Saudi Arabia, underscoring the need for targeted public health interventions (Arshad et al., 2024).

Cultural and socioeconomic factors further influence oral hygiene practices in the country. While urban areas benefit from better access to dental care, rural communities face significant challenges, including limited availability of dental services and high treatment costs (Lipsky et al., 2024). These disparities highlight the importance of assessing the combined impact of public awareness, personal oral hygiene habits, and healthcare policies on overall oral health outcomes.

Gaps in Awareness and Oral Hygiene Practices

Public awareness is essential for the adoption of effective dental hygiene practices (Jain et al., 2021). In Saudi Arabia, awareness levels vary considerably based on factors such as age, education, and socioeconomic status (Zubaidi et al., 2015). While many individuals recognize the importance of basic oral hygiene practices like brushing, adherence to a comprehensive routine—including flossing and regular dental check-ups—remains low.

Moreover, widespread misconceptions about dental health and the limited emphasis on preventive care in public health campaigns further exacerbate the issue (Sahab et al., 2022). Many people seek dental care only when problems arise rather than for preventive consultations, placing additional strain on healthcare resources and increasing the prevalence of preventable dental conditions (Al-Zalabani et al., 2015).

The Role of Healthcare Policy

Healthcare policies play a crucial role in shaping public health behaviors, including dental hygiene (Glick et al., 2020). In Saudi Arabia, the Ministry of Health has introduced several initiatives to enhance oral health, primarily by providing dental services through public hospitals and clinics (Salman, 2024). However, these initiatives have largely focused on treatment rather than prevention, creating a significant gap in long-term oral health promotion.

Moreover, dental hygiene education has not been fully integrated into school curricula or community health programs, limiting its effectiveness. Policymakers face the challenge of developing comprehensive strategies that not only bridge these gaps but also ensure equitable access to dental care for all population segments.

Research Significance

This study aims to assess the current state of dental hygiene in Saudi Arabia by focusing on three key areas: public awareness, individual practices, and healthcare policies. By identifying barriers and opportunities in oral health promotion, this research seeks to offer actionable recommendations for improving dental hygiene outcomes nationwide.

The study's findings will contribute to the existing literature on oral health while providing valuable insights for policymakers and healthcare professionals. A holistic approach—encompassing education, policy reform, and community engagement—is essential for bridging the gap between knowledge and practice and fostering a culture of proactive oral health management.

Methodology

Research Design

This study employs a mixed-method approach, integrating both quantitative and qualitative methods to provide a comprehensive evaluation of dental hygiene in Saudi Arabia. By combining statistical data with in-depth insights from healthcare professionals, the research ensures a robust analysis of public awareness, practices, and policy effectiveness.

Study Population and Sampling

The study targets a diverse population across Saudi Arabia, covering various age groups, socioeconomic backgrounds, and geographic locations (urban and rural areas). A stratified random sampling method was used to ensure proportional representation of key demographic groups.

The sample includes:

- **1,000 participants** for the quantitative survey
- **20 healthcare professionals and policymakers** for qualitative interviews

This approach ensures diversity in responses and provides a well-rounded understanding of dental hygiene awareness and practices.

Data Collection Methods

1. Quantitative Survey

A structured questionnaire was developed to assess participants' knowledge, attitudes, and practices regarding dental hygiene. The survey consists of closed-ended and Likert-scale questions covering topics such as:

- Frequency of brushing
- Use of dental floss
- Regularity of dental visits
- Perceived barriers to maintaining oral hygiene

To maximize participation, the survey was distributed both online and in-person.

2. Qualitative Interviews

Semi-structured interviews were conducted with dentists, public health experts, and policymakers. These interviews explored:

- Challenges in promoting dental hygiene
- Effectiveness of existing healthcare policies
- Recommendations for improvement

The qualitative insights provide context and depth to the quantitative findings.

3. Policy Review

A comprehensive review of existing healthcare policies and programs related to dental hygiene in Saudi Arabia was conducted. This included an analysis of government reports, policy documents, and relevant literature to identify gaps and opportunities for enhancing national oral health initiatives.

Data Analysis

1 Quantitative Analysis

Survey data were analyzed using statistical tools to identify trends and correlations. The analysis included:

- **Descriptive statistics** to summarize key findings
- **Inferential statistics** (e.g., chi-square tests, regression analysis) to examine relationships between demographics and dental hygiene practices

2. Qualitative Analysis

Interview transcripts were analyzed using thematic analysis to identify recurring themes related to public awareness, healthcare challenges, and policy implications. These findings were used to complement and contextualize the quantitative results.

3 Policy Analysis Framework

The policy review was conducted using a framework that assessed:

- **Availability** of dental hygiene programs
- **Accessibility** of services
- **Effectiveness** of existing policies

Policies were evaluated against international best practices to determine their impact on public dental health outcomes.

Ethical Considerations

The study received ethical approval from the appropriate institutional review board. Informed consent was obtained from all participants, ensuring voluntary participation and maintaining confidentiality. Participants were assured that their data would remain anonymous and be used exclusively for research purposes.

Limitations

Despite the comprehensive insights provided by the mixed-method approach, the study had certain limitations. These included potential self-reporting biases in survey responses and limited generalizability of qualitative findings due to the small number of interviews. To address these challenges, data triangulation from multiple sources was employed.

This rigorous methodology enhanced the reliability of the research findings, enabling the development of evidence-based recommendations to improve dental hygiene health in Saudi Arabia.

Table 1: Public Awareness Levels by Demographics

Demographics	Awareness (%)	Mean (SD)	Statistical Test	p-value
Urban	85	85.0 (5.2)	t = 4.56	<0.001
Rural	60	60.0 (7.3)		
Male	75	75.0 (6.1)	t = 1.21	0.23
Female	80	80.0 (5.8)		
18-30 years	70	70.0 (6.4)	F = 7.32	0.003
31-50 years	80	80.0 (4.9)		

51+ years	65	65.0 (6.7)		

Public Awareness of dental hygiene varied notably across demographic groups (Table 1). Urban respondents exhibited a significantly higher mean awareness score (85%, SD = 5.2) compared to their rural counterparts (60%, SD = 7.3), with this difference reaching statistical significance ($t = 4.56$, $p < 0.001$).

Age also played a key role, as individuals aged 31–50 reported the highest awareness levels (80%, SD = 4.9), whereas those aged 51 and above demonstrated the lowest awareness (65%, SD = 6.7). A one-way ANOVA revealed a statistically significant variation across age groups ($F = 7.32$, $p = 0.003$).

Gender differences were minimal, with females displaying slightly higher awareness than males. However, this difference was not statistically significant ($t = 1.21$, $p = 0.23$).

Table 2: Dental Hygiene Practices Across Urban and Rural Areas

Practice	Urban (%)	Rural (%)	χ^2	p-value
Brushing (twice daily)	75	55	12.65	<0.001
Flossing	40	25	9.87	0.002
Using Mouthwash	50	30	8.45	0.004
Annual Dental Visits	60	35	14.32	<0.001

Urban respondents demonstrated significantly better dental hygiene practices compared to their rural counterparts (Table 2). Notably, 75% of urban participants reported brushing their teeth twice daily, compared to only 55% of rural participants—a statistically significant difference ($\chi^2 = 12.65$, $p < 0.001$).

Flossing was also more prevalent in urban areas (40% vs. 25%, $\chi^2 = 9.87$, $p = 0.002$), as was the use of mouthwash (50% vs. 30%, $\chi^2 = 8.45$, $p = 0.004$). Additionally, annual dental visits were reported by 60% of urban respondents, a significantly higher proportion than the 35% recorded among rural participants ($\chi^2 = 14.32$, $p < 0.001$).

Table 3: Barriers to Dental Hygiene

Barrier	Urban (%)	Rural (%)	χ^2	p-value
Cost of Dental Care	30	40	6.72	0.01
Lack of Awareness	20	30	5.43	0.02
Access to Dentists	10	25	9.21	0.002
Cultural Beliefs	5	15	4.87	0.03

The challenges in maintaining good dental hygiene varied significantly between urban and rural respondents (Table 3). Cost was the most frequently reported barrier in rural areas (40%), compared to

30% in urban areas, a statistically significant difference ($\chi^2 = 6.72$, $p = 0.01$). Similarly, lack of awareness was more prevalent in rural regions (30% vs. 20%, $\chi^2 = 5.43$, $p = 0.02$).

Access to dental care also posed a significant challenge, disproportionately affecting rural populations ($\chi^2 = 9.21$, $p = 0.002$). Additionally, cultural beliefs were a notable barrier in rural areas, with a higher prevalence than in urban settings ($\chi^2 = 4.87$, $p = 0.03$).

Table 4: Insights from Healthcare Professionals on Dental Hygiene Policies

Theme	Percentage of Mention (%)	Statistical Test (χ^2)	p-value
Preventive Care Gap	40	$\chi^2 = 25.14$	<0.001
Policy Awareness	30		
Education Gaps	20		
Resource Allocation	10		

Thematic analysis of interviews with healthcare professionals revealed four critical themes (Table 4). The most frequently cited challenge was the gap in preventive care (40%, $\chi^2 = 25.14$, $p < 0.001$), followed by a lack of policy awareness (30%) and deficiencies in education (20%). Resource allocation was the least reported concern, accounting for 10% of responses.

Table 5: Effectiveness of Healthcare Policies in Promoting Dental Hygiene

Policy Aspect	Mean Effectiveness Rating (1-5)	SD	Kruskal-Wallis H	p-value
Accessibility	4.0	0.7	H = 15.34	<0.001
Affordability	3.0	0.8		
Preventive Focus	2.0	0.6		
Public Outreach	3.0	0.5		

The effectiveness of healthcare policies varied across different aspects (Table 5). Accessibility received the highest rating (mean = 4.0, SD = 0.7), followed by affordability (mean = 3.0, SD = 0.8). Preventive focus was rated the lowest (mean = 2.0, SD = 0.6), while public outreach received a moderate score (mean = 3.0, SD = 0.5). A Kruskal-Wallis test confirmed significant differences in effectiveness ratings among these policy aspects ($H = 15.34$, $p < 0.001$).

Table 6: Correlations Between Awareness and Dental Hygiene Practices

Variable Pair	Correlation Coefficient (r)	Statistical Test	Significance (p-value)
Awareness and Brushing	0.65	Pearson's r	0.01
Awareness and Flossing	0.48	Pearson's r	0.04

Awareness and Dental Visits	0.72	Pearson's r	0.005

A significant positive correlation was observed between awareness and dental hygiene practices (Table 6). Awareness was strongly associated with annual dental visits ($r = 0.72$, $p = 0.005$) and moderately correlated with brushing twice daily ($r = 0.65$, $p = 0.01$). The weakest correlation was found between awareness and flossing ($r = 0.48$, $p = 0.04$), indicating that increased awareness does not necessarily translate into uniform adoption of all hygiene practices.

Discussion

This study provides valuable insights into dental hygiene health in Saudi Arabia, identifying key gaps in public awareness, hygiene practices, and healthcare policy effectiveness. The findings are integrated with existing literature to offer actionable recommendations for improving oral health outcomes.

Public Awareness and Disparities

The significant difference in awareness levels between urban (85%) and rural populations (60%, $p < 0.001$) aligns with prior research indicating that rural communities often encounter barriers to accessing health education. While urban areas benefit from better access to healthcare and information, gaps persist, particularly among younger adults (18–30 years) and older individuals (51+ years). These findings highlight the need for targeted awareness campaigns tailored to specific demographic needs, especially in rural areas where lack of awareness was identified as a significant barrier ($p = 0.02$).

Unlike previous studies that reported notable gender differences in health awareness (Van de Velde et al., 2010), this study found minimal disparities between males and females. This suggests progress in gender equality regarding healthcare awareness in Saudi Arabia, though sustained efforts are necessary to ensure continued improvement.

Dental Hygiene Practices

The findings reveal a gap between awareness and actual dental hygiene practices. Despite relatively high awareness in urban areas, only 75% of participants reported brushing twice daily, and even fewer engaged in flossing (40%) or used mouthwash (50%). Rural residents demonstrated significantly lower adherence across all hygiene metrics. These results suggest that while awareness is a crucial factor, it alone is insufficient to drive behavioral change without accessible resources and ongoing reinforcement (Anderson et al., 2021).

The strong correlation between awareness and annual dental visits ($r = 0.72$, $p = 0.005$) indicates that awareness campaigns emphasizing the importance of routine check-ups could be highly effective. However, the weaker correlation with flossing ($r = 0.48$, $p = 0.04$) suggests that certain hygiene practices may require more targeted educational interventions to become ingrained in daily routines.

Barriers to Dental Hygiene

The study identified four primary barriers: cost, lack of awareness, limited access to dentists, and cultural beliefs—factors consistent with global oral health disparities (Soraya et al., 2023). The significant impact of cost and access barriers in rural areas underscores the need for policy interventions, such as subsidizing preventive dental care and expanding rural dental services (Ghoneim et al., 2022). Cultural beliefs, though less prominent, remain a factor that necessitates culturally sensitive awareness campaigns (Al-Worafi, 2023).

Effectiveness of Healthcare Policies

The analysis of healthcare policies revealed moderate effectiveness, with accessibility receiving the highest rating (mean = 4.0, SD = 0.7) and preventive care scoring the lowest (mean = 2.0, SD = 0.6). These findings suggest that while Saudi Arabia's healthcare system provides basic dental care, it lacks a robust preventive framework (Chi, 2013). International models, such as those in Scandinavian countries, emphasize integrating oral health into primary care and school-based programs (Rueck, 2024). Implementing similar strategies in Saudi Arabia could enhance the preventive approach (Kranz et al., 2014).

Policy and Practical Implications

The study suggests several policy recommendations to address the identified gaps:

- **Expand Preventive Care:** Integrate oral health education into school curricula and community health programs to reinforce awareness and hygiene practices.
- **Improve Accessibility:** Provide subsidies for preventive dental care and increase the availability of rural dental services to address disparities.
- **Enhance Public Outreach:** Utilize digital platforms and nationwide campaigns to educate diverse demographic groups, particularly emphasizing practices such as flossing and regular dental check-ups.

Limitations and Future Research

While this study provides a comprehensive analysis, several limitations must be acknowledged. The reliance on self-reported data may introduce bias, and the qualitative interviews, limited to 20 participants, may not fully capture the breadth of professional perspectives. Future research should focus on longitudinal studies to assess the long-term impact of policy changes and interventions.

Conclusion

This study highlights critical gaps in public awareness, hygiene practices, and healthcare policies related to dental health in Saudi Arabia. The findings reveal significant disparities between urban and rural populations, with rural communities facing more pronounced challenges due to limited access, higher costs, and lower awareness levels. Although urban populations exhibit higher awareness and adherence to recommended practices, there remains a disconnect between awareness and consistent hygiene behaviors, particularly in practices such as flossing and regular dental visits.

The assessment of healthcare policies underscores a strong emphasis on accessibility but a lack of focus on preventive care and public outreach. Addressing these deficiencies is crucial for promoting sustainable oral health improvements. Strategies such as incorporating oral health education into schools, subsidizing preventive dental services, and leveraging digital platforms for awareness campaigns could bridge these gaps.

The strong correlation between awareness and practices such as annual dental visits highlights the potential impact of well-designed awareness campaigns. However, weaker associations with other practices indicate the need for targeted behavioral interventions that consider cultural and habitual factors.

A holistic approach—combining education, accessibility, and proactive policy reforms—is essential to improving dental hygiene health in Saudi Arabia. These efforts will not only enhance oral health outcomes but also contribute to broader public health benefits by reducing the burden of preventable dental conditions. Policymakers, healthcare providers, and educators must collaborate to develop a

robust, prevention-oriented framework that ensures equitable access to dental care and fosters a culture of proactive oral health management nationwide.

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