



Contents lists available at ScienceDirect

The Saudi Dental Journal

journal homepage: www.ksu.edu.sa
www.sciencedirect.com

Original Article

Demographic insights into the periodontology workforce in Saudi Arabia: A descriptive study

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ARTICLE INFO

Keywords:
Demographics
Dental
Periodontology
Saudi Arabia
Workforce

ABSTRACT

Objective: This study assessed the demographic characteristics of the periodontal workforce in Saudi Arabia.
Methods: This was a retrospective study of periodontists practicing in Saudi Arabia from January 2000 through May 2023. The data were requested from the Saudi Commission for Health Specialties and included the number of periodontists and dentists, the number of Saudi and non-Saudi periodontists, the sex distribution of periodontists, their ranking, and the geographic distribution across the 13 regions.
Results: This study identified 700 practicing periodontists, representing 2.2 periodontists per 100,000 people. Consultant periodontists composed 31% of the population, mostly Saudi nationals. Approximately 53% of practicing periodontists resided in Saudi Arabia, mostly in the Riyadh, Makkah, and Eastern Provinces. Al Bahah, Najran, and the Northern Borders had fewer periodontists.
Conclusion: This study provides valuable insights into shaping the periodontal workforce in Saudi Arabia. Future studies on the factors related to the periodontology workforce can assist policymakers in implementing effective strategies to significantly improve the current workforce.

1. Introduction

Periodontology is a dental specialty focused on preventing and managing diseases affecting the tissues surrounding teeth, such as gingivitis and periodontal disease. Periodontists specializing in periodontics play a major role not only in managing these conditions but also in preventing tooth loss, managing mucogingival deformities, and performing site developmental dental implant procedures. Recent studies have indicated a high prevalence of periodontal disease in Saudi Arabia (Alawaji et al., 2022; Hossain et al., 2018). Consequently, there is an increasing demand for dental implants, preorthodontic procedures, and preresorative surgical treatments. Considering the critical role played by periodontists in diagnosing and managing these conditions, it is imperative to comprehensively assess the existing periodontology workforce.

Studies have assessed the number and distribution of periodontists in countries such as the United States, New Zealand, and Australia (Waldman, 1993; Waldman, 1995; Waldman, 1998; Waldman, 1999; Waldman and Chaudhry, 2009; Brown et al., 2002). Waldman and Chaudhry (2009) reviewed previous American Dental Association (ADA)

reports and offered insights into the changing numbers of periodontists over time. There were 5250 actively practicing periodontists in 2006, compared to 4705 in 1995 and 4494 in 1991. The periodontist-to-adult population ratio in the United States increased from 2.1 to 2.2 periodontists per 100,000 persons between 1991 and 1995. However, between 1995 and 2006, the ratio declined slightly, returning to 2.1 (Waldman & Chaudhry, 2009). Despite the overall increase in the number of periodontists, considerable disparities in practitioner-to-population ratios persist across different regions (Waldman and Chaudhry, 2009). Additionally, among the Australian and New Zealand Academy of Periodontics (ANZAP) members, approximately 33 % are planning to retire within the next decade (Brown et al., 2002). These studies highlight regional disparities and the necessity for initiatives to improve the distribution of the periodontist workforce.

A study by Alqahtani et al. (2022) evaluated the dental workforce in Saudi Arabia and reported a dentist-to-population ratio of 1:1288. There was a slightly greater proportion of male dentists than female dentists, and the highest number of dentists was identified in the Riyadh region, followed by the Makkah region. However, this study did not specifically explore subspecialties such as periodontics. To the best of our

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<https://doi.org/10.1016/j.sdentj.2024.02.020>

Received 16 November 2023; Received in revised form 27 February 2024; Accepted 28 February 2024

Available online 3 March 2024

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knowledge, no information is available regarding the current demographics of the Saudi periodontal workforce, the ratio of periodontists to the population, the number and rank of registered periodontists, or their distribution across the regions of Saudi Arabia.

Therefore, this study investigated the demographic characteristics of the Saudi periodontal workforce.

2. Materials and Methods

2.1. Data source and study Population

This retrospective study utilized a purposive sampling method to analyze data of periodontists practicing in Saudi Arabia between January 2000 and May 2023. The recruitment strategy included all available data within the specified timeframe obtained from the Saudi Commission for Health Specialties (SCFHS) through email. The King Abdullah International Medical Research Center Institutional Review Board approved this study because it did not include human subjects or relevant data (IRB#NRC23R/570/08).

2.2. Variables of interest

The variables of interest were the number of periodontists and dentists currently practicing in Saudi Arabia, nationality, sex, rank according to the SCFHS (Table 1), and geographic distribution among the 13 regions of Saudi Arabia. These regions include Al-Bahah, Al-Jawf, Al-Madinah, Al-Qassim, Asir, Eastern Province, Hail, Jizan, Makkah, Najran, the Northern Borders, Riyadh, and Tabuk. We also included an “Unknown region” category for periodontists who did not specify their practicing location. The data were processed using Microsoft Excel 2016. The periodontist-to-population ratio was calculated by dividing the number of periodontists by the total population and multiplying by 100,000. According to the General Authority for Statistics, the population of Saudi Arabia as of 2023 was 32,175,224 (Population Estimates. General Authority for Statistics, 2023).

3. Results

As of May 2023, the total number of registered dentists in Saudi Arabia was 42,906. Among them, 26,405 (61.54 %) were Saudi nationals, and 16,501 (38.46 %) were non-Saudi nationals. There were 21,220 male dentists, accounting for 49.46 % of the total, and 21,686 female dentists, constituting 50.54 % of the total. Among Saudi dentists, 12,190 (57.45 %) were male and 14,215 (66.55 %) were female. Table 2 presents the demographic information of the registered dentists in Saudi Arabia, categorized by nationality and sex.

There were 700 registered periodontists, 368 (52.5 %) of whom were from Saudi Arabia. Among the Saudi periodontists, 200 (28.6 %) and 168 (24 %) were men and women, respectively. Of the 332 (47.4 %)

Table 1
Ranks of physicians in Saudi Arabia according to the Saudi Commission for Health Specialties (SCFHS).

Rank	Description
Consultant	A physician holding a certificate from the first or second group, along with requisite experience and other classification criteria.
Senior registrar	A healthcare provider with a postgraduate training program certificate from the first or second group, such as a Saudi board certificate.
Registrar	A healthcare provider possessing a certificate from the third group and meeting the required qualifications.
Training resident	A medical student enrolled in a postgraduate training program under the first (Saudi board certificate or equivalent) and second groups.
Resident	A medical student in postgraduate training with a certificate from the third group, not fulfilling registrar qualifications, or having a minimum of 2 years' experience in the specialty field.

Table 2
Number of registered dentists in Saudi Arabia (as of May 2023).

Gender	Saudi N (row %)	Non-Saudi N (row %)	Total N (column %)
Male	12,190 (57.45)	9030 (42.55)	21,220 (49.46)
Female	14,215 (66.55)	7471 (35.21)	21,686 (50.54)
Total	26,405 (61.54)	16,501 (38.46)	42,906

non-Saudi periodontists, 227 (68.3 %) and 105 (31.6 %) were men and women, respectively. The ratio of periodontists per 100,000 people in Saudi Arabia was approximately 2.2. Table 3 presents the number of registered periodontists in Saudi Arabia categorized by rank and sex.

In terms of specific rank, there were 217 consultant periodontists, accounting for 31 % of all periodontists. Among the consultant periodontists, 105 were Saudi male periodontists (48.4 %), 70 were Saudi female periodontists (32.26 %), and 42 were non-Saudi (19.3 %). In addition, 94 senior registered periodontists accounted for 13.43 % of the total. Among them, 35 were Saudi male periodontists (37.2 %), 30 were female (32 %), and 29 were non-Saudi periodontists (30.8 %). In the registrar category, 287 registered periodontists were identified, representing 41 % of all the periodontists. Of these, the majority (234 81.5 %) were non-Saudi periodontists (81.5 %). There were 73 trained resident periodontists, comprising 10.43 % of all the periodontists. Among them, 25 were Saudi male periodontists (34.2 %) and 47 were Saudi female periodontists (64.4 %). Furthermore, 29 resident/general dentist periodontists, primarily non-Saudis, accounted for 4.14 % of all periodontists.

There were 427 and 273 male and female periodontists, respectively. Notably, the Riyadh region had the most periodontists, with 163 professionals, representing 23.3 % of the total. Similarly, the Makkah region had 139 periodontists, accounting for 19.9 % of the total. The Eastern Province contributed 60 periodontists, accounting for 8.6 % of the total. In the unknown region, there were 216 periodontists, accounting for 30.9 % of all the periodontists. Interestingly, regions such as Al Bahah, Najran, and the Northern Borders had the fewest periodontists. Table 4 presents the distribution of periodontists across different regions of Saudi Arabia, categorized by sex.

4. Discussion

This study presents a comprehensive overview of Saudi Arabia's periodontal workforce, categorized according to nationality, rank, sex, and geography. As of May 2023, data from SCHFS revealed a total of 700 practicing periodontists in Saudi Arabia, resulting in a ratio of approximately 2.2 periodontists per 100,000 people. Previous research conducted by Al-Baker et al. identified 387 periodontists working in Saudi Arabia in 2016 (Al-Baker et al., 2017). In addition, Alqahtani et al.

Table 3
Number of registered periodontists in Saudi Arabia by rank (as of May 2023).

Rank	Saudi		Non-Saudi		Total N (column %)
	Male N (row %)	Female N (row %)	Male N (row %)	Female N (row %)	
Consultant	105 (48.4)	70 (32.26)	31 (14.3)	11 (5.07)	217 (31.0)
Senior registrar	35 (37.2)	30 (31.91)	13 (13.8)	16 (17.02)	94 (13.43)
Registrar	33 (11.5)	20 (6.97)	165 (57.5)	69 (24.04)	287 (41.0)
Training resident	25 (34.2)	47 (64.38)	0 (0.0)	1 (1.37)	73 (10.43)
Resident/general dentist	2 (6.9)	1 (3.45)	18 (62.1)	8 (27.59)	29 (4.14)
Total	200 (28.57)	168 (24.0)	227 (32.43)	105 (15.0)	700

Table 4
Distribution of periodontists across different regions of Saudi Arabia.

Regions of Saudi Arabia	Male N	Female N	Total N (column %)
Al Bahah	3	0	3 (0.43)
Al Jawf	6	3	9 (1.29)
Al Madinah	16	10	26 (3.71)
Al-Qassim	13	10	23 (3.29)
Asir	20	4	24 (3.43)
Eastern Province	33	27	60 (8.57)
Hail	7	1	8 (1.14)
Jizan	8	2	10 (1.43)
Makkah	79	60	139 (19.86)
Najran	5	0	5 (0.71)
Northern Borders	4	2	6 (0.86)
Riyadh	87	76	163 (23.29)
Tabuk	5	3	8 (1.14)
Unknown*	141	75	216 (30.86)
Total	427	273	700

* Unknown regions include periodontists who did not specify their practice locations.

reported 581 periodontists practicing in Saudi Arabia between 2015 and 2020 (Alqahtani et al., 2022). Our study indicates that a growing number of periodontists, indicating a strong interest in periodontics. This trend is essential for meeting the increasing demand for well-trained professionals capable of managing all specialty-related conditions.

Saudi Arabia has 42,906 registered dentists, 61.5 % of whom are Saudi citizens. A study conducted by Al-Baker et al. reported 16,887 dentists practicing in Saudi Arabia up to 2016 (AlBaker et al., 2017). Alqahtani et al. documented 27,181 dentists working in Saudi Arabia between 2015 and 2020 (Alqahtani et al., 2022). Notably, both of these studies focused primarily on the overall dentist population and did not specifically delve into dental subspecialties such as periodontics (AlBaker et al., 2017; Alqahtani et al., 2022). Considering that our data indicate a progressive increase in the number of registered dentists in recent years, we recognize the need for a comprehensive study to explore the demographic and professional aspects of the periodontology workforce in Saudi Arabia.

The ratio of approximately 2.2 periodontists per 100,000 people may appear to be modest, yet Saudi Arabia has a significant number of certified periodontists with the highest rank, indicating the strong presence of specialist professionals. This is similar to the periodontist-to-adult population ratio of 2.1 periodontists per 100,000 persons reported in the United States in 2006 (Waldman and Chaudhry, 2009). Saudi Arabia has 217 consultant periodontists, accounting for 31 % of all periodontists, 80 % of whom are Saudi citizens. These findings indicate that Saudi Arabia has many highly qualified periodontists who can treat crucial periodontal difficulties. Furthermore, 73 trained resident periodontists were identified, accounting for 10.43 % of all periodontists, demonstrating a considerable interest in periodontics among recent graduates.

Geographically, periodontists are concentrated in specific regions, with 43 % of them practicing in Riyadh and Makkah. Additionally, 31 % of practicing periodontists had unknown practice locations, emphasizing the importance of accurate data to reflect the distribution of periodontists. Intriguingly, regions such as Al Bahah, Najran, and the Northern Borders have the lowest number of periodontists. This uneven distribution among regions raises concerns regarding unequal access to dental care. Therefore, health policymakers should consider the data presented in this study along with other relevant information to draw more precise conclusions, re-evaluate the distribution of periodontists, assess their necessity in specific areas, and plan accordingly for the future.

The strengths of this study lie in its comprehensive analysis, which used a large sample size and up-to-date data to evaluate the distribution of periodontists. Our findings provide insights into potential future

workforce trends and highlight regions requiring equitable access to dental care. The ratio of 2.2 periodontists per 100,000 people highlights the difficulties in obtaining specialized periodontal care, particularly in severe situations. These findings have implications for dental institutions and policymakers, allowing for focused efforts to improve workforce distribution and address oral health requirements. Collaboration between general dentists and specialists is essential; however, shortages have occurred in some areas.

The limitations of this study include the focus only on periodontists registered with the SCFHS, which potentially does not cover unregistered professionals who provide periodontal services. In addition, other factors influencing workforce distribution, such as practice setting and education, were not explored. Moreover, our study lacked data on the number of periodontal services needed across Saudi Arabia, which may require future investigations to establish the exact number of periodontists necessary in each region of Saudi Arabia. Thus, we acknowledge the crucial role played by universities in bridging this gap. Collaboration between universities and healthcare authorities could facilitate strategic planning and allocation of resources to meet the demand for periodontal services in underserved regions. We acknowledge the inherent limitations of our study design, which primarily focuses on providing descriptive insights into the periodontology workforce in Saudi Arabia. Future studies exploring novel hypotheses or conducting detailed statistical analyses could enhance our understanding of the Saudi periodontal workforce.

5. Conclusion

This study provides valuable insights into the demographic characteristics of the Saudi Arabian periodontology workforce. These findings can lead researchers and policymakers to strive to enhance the distribution of the dental workforce and improve oral health outcomes across the country. Further research on the impact of workforce regulations may provide important information for improving periodontal treatments in Saudi Arabia.

CRedit authorship contribution statement

Hussam M. Alqahtani: Conceptualization, Data curation, Writing – original draft, Writing – review & editing, Formal analysis, Methodology. **Majed K. Alshehri:** Conceptualization, Writing – original draft, Writing – review & editing.

Acknowledgment

None.

Ethical statement

This study was approved by the Institutional Review Board of the King Abdullah International Medical Research Center (NRC23R/570/08).

Funding statement

This study did not receive any specific grants from funding agencies in the public, commercial, or nonprofit sectors.

Summary: This study assessed the current demographics of the periodontal workforce in Saudi Arabia. The study reveals 700 practicing periodontists in Saudi Arabia, representing a ratio of 2.2 per 100,000 population. Notably, 31 % are consultant periodontists, predominantly Saudi nationals, and 53 % of practicing periodontists are Saudi. These findings provide essential insights for shaping and improving the Periodontology workforce in Saudi Arabia, guiding future strategies for enhancement.

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