



Challenges and Opportunities in Dental Medicine Education and Healthcare in Morocco: A Review of the Creation of the Dental Medicine Program at FMPDF, Fez

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ABSTRACT

Original Research Article

This review examines the establishment of the Dental Medicine Program at the Faculty of Medicine, Pharmacy, and Dentistry in Fez (FMPDF), highlighting its role in addressing the inequities in dental education and healthcare access in Morocco. With only two public dental faculties serving the entire country, regional disparities and limited resources have long hindered oral healthcare. This initiative aims to decentralize dental education, expand access to care, and foster interdisciplinary collaboration and research. The review explores the historical context, challenges in implementation, and the anticipated impact of this program on Morocco's healthcare system. Insights are drawn from national and international studies to contextualize its potential outcomes.

Keywords: Dental Education Morocco, Oral Health Workforce Maghreb, Dental Public Health Morocco, Dental Education Policy.

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Introduction

The launch of public dental faculties in Casablanca and Rabat in 1981 marked a significant milestone in Morocco's oral healthcare landscape. However, these two faculties, with an annual capacity of approximately 300 students, are insufficient to meet the needs of a rapidly growing population [1]. This limitation has exacerbated disparities, with 70% of dentists concentrated in urban centers, leaving rural areas underserved [2].

Recent studies show that Morocco has a dentist-to-population ratio of 1.2 per 10,000 inhabitants, far below the World Health Organization's recommended 3 per 10,000 [3].

The establishment of the Dental Medicine Program at the Faculty of Medicine, Pharmacy, and Dentistry of Fez (FMPDF) aims to address these challenges. This program seeks to decentralize education, expand access to oral healthcare, and integrate research into practice, aligning with the WHO's global health strategies [4].

This study is designed as a narrative policy-oriented review examining the establishment of the Dental Medicine Program at the Faculty of Medicine, Pharmacy, and Dentistry of Fez (FMPDF). The review synthesizes available literature, policy documents, and institutional reports to analyze the historical background, implementation process, and anticipated impact of the program on dental education and oral healthcare access in Morocco.

Unlike previous studies that mainly describe oral health challenges in Morocco, this review specifically analyzes the strategic role of the newly established Dental Medicine Program at FMPDF in addressing systemic inequalities in dental education and healthcare access. By combining policy analysis with regional workforce data, the study provides a structured evaluation of how decentralized dental education could reshape Morocco's oral healthcare system.

Materials and Methods

This study adopts a narrative review approach combining policy analysis and literature review.

Literature Search Strategy

Relevant publications were identified through searches in databases including PubMed, Google Scholar, and institutional repositories. Keywords included *dental education Morocco*, *oral health workforce Maghreb*, *dental public health Morocco*, and *dental education policy*.

Inclusion Criteria

Sources published between 2000 and 2024 addressing dental education, oral healthcare access, workforce distribution, or health policy in Morocco and the Maghreb region were

included. Policy documents from the Moroccan Ministry of Health and WHO reports were also considered.

Exclusion Criteria

Publications unrelated to dental education, oral health policy, or regional healthcare workforce issues were excluded.

Policy and Institutional Documents

Additional information was obtained from official reports and agreements related to the establishment of the Dental Medicine Program at FMPDF, including the cooperation framework signed with the Moroccan Ministry of Higher Education in December 2022.

Results

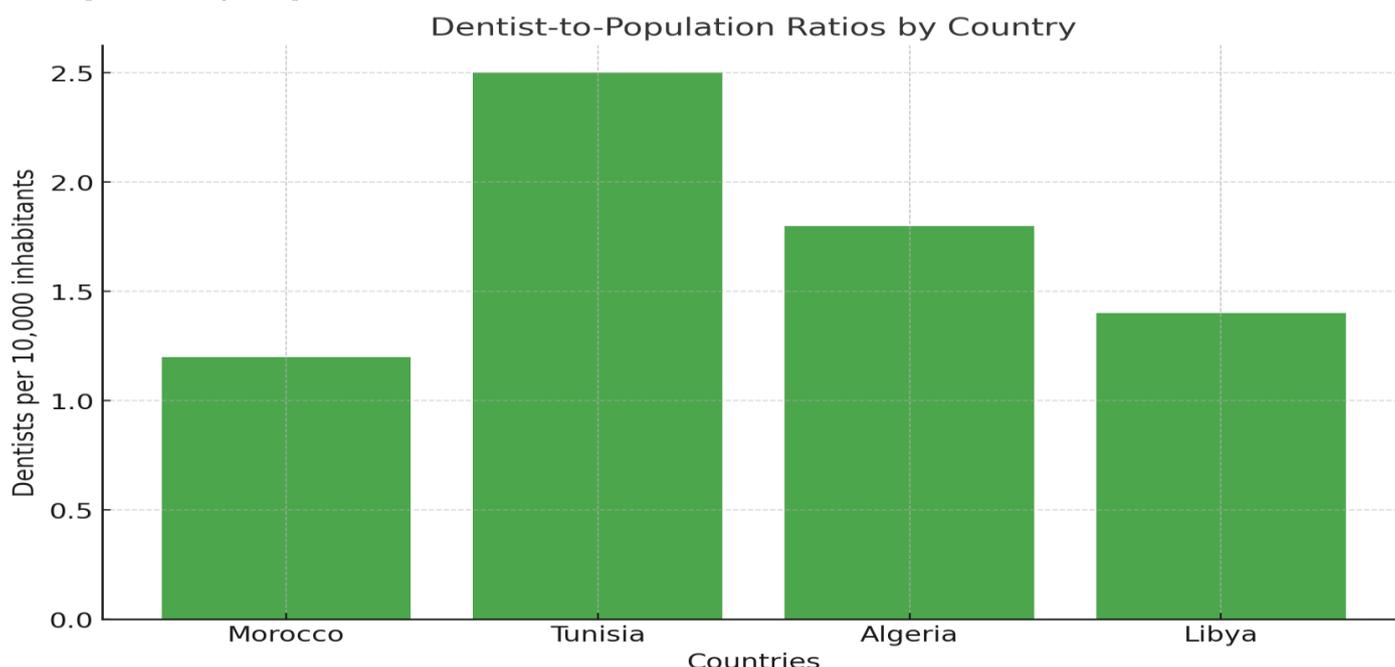
Addressing Regional Disparities

Morocco faces significant inequalities in oral healthcare distribution, with approximately 70% of dentists practicing in urban centers such as Rabat and Casablanca, leaving rural areas underserved. This stark contrast highlighting the disparity in dental practitioner availability between urban and rural regions [5].

Dentist-to-Population Ratios in the Maghreb

Morocco has a dentist-to-population ratio of 1.2 per 10,000 inhabitants, trailing behind Algeria and Tunisia. These figures are depicted in *Graph-1*, which underscores the urgent need for Morocco to increase its dental workforce to align with the World Health Organization's recommendation of 3 per 10,000 inhabitants [2, 5]. The disparity highlights a crucial gap that the Dental Medicine Program at FMPDF aims to address.

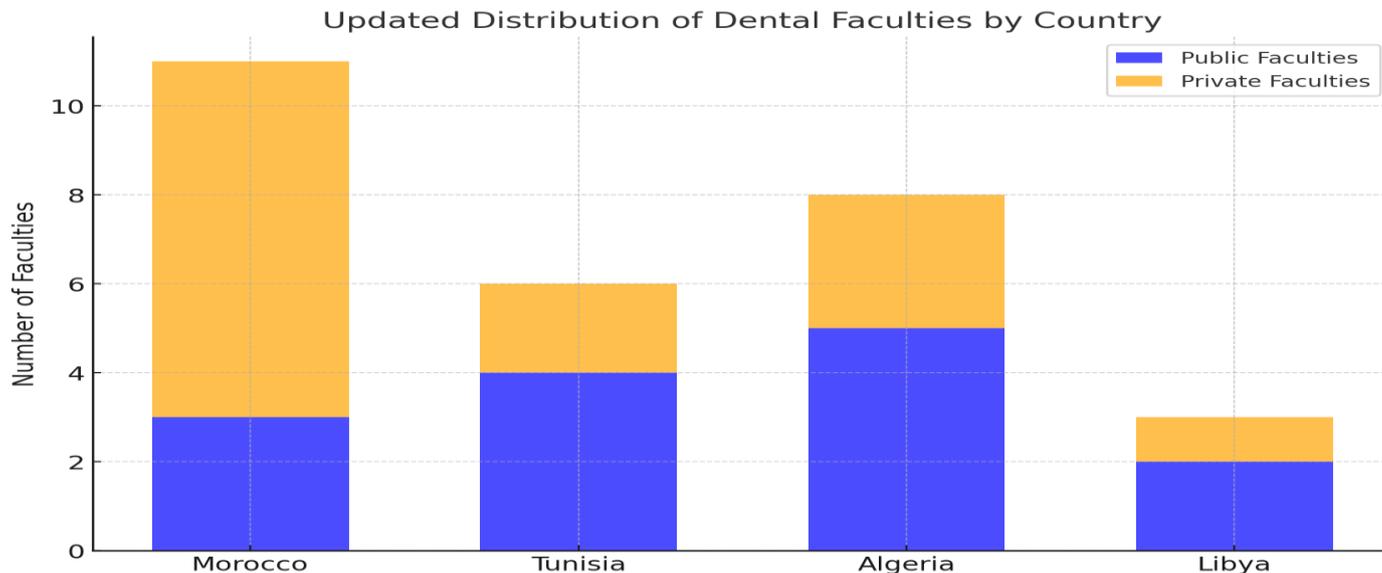
Graph-1: Dentist-to-population ratio in selected Maghreb countries (Morocco, Algeria, Tunisia). Data compiled from national health reports and regional public health studies.



Enhancing Educational Capacity

With the launch of the FMPDF program, the projected number of graduates is expected to increase significantly, from 50 graduates in 2024 to 150 by 2030. This growth trajectory is illustrated in *Graph 2*, highlighting the program's potential contribution to workforce development and its role in alleviating shortages in rural regions [2, 5].

Graph-2: Updated distribution of dental faculties by country



Discussion

Morocco's dental education system has historically faced significant challenges. The public faculties in Rabat and Casablanca accommodate only 300 students annually, failing to meet the growing demand for dental professionals. This has led to a concentration of dental practitioners in urban areas such as Rabat and Casablanca, while rural regions remain underserved. Approximately 70% of dentists practice in these urban centers, with rural areas lacking both practitioners and modern facilities. Compounding these disparities, private institutions charge exorbitant tuition fees, limiting access for middle- and low-income families [5].

In comparison with Algeria and Tunisia, Morocco exhibits higher unmet needs for dental hygiene and conservative treatments. For example, while Algeria and Tunisia report unmet needs ranging between 43% and 74%, Morocco's figures exceed 77%. This highlights the urgent need for systemic reforms to address these gaps. The creation of the Dental Medicine Program at FMPDF represents a critical step toward mitigating these inequities. By decentralizing education and increasing enrollment capacity, this program aims to address the regional disparities in dental workforce distribution [6].

The program's investment of 2 billion MAD includes modernizing infrastructure, integrating state-of-the-art technology, and hiring qualified faculty. These measures are designed to enhance the quality of education and ensure that graduates are well-equipped to meet the demands of the profession. Furthermore, collaborative efforts with local health authorities foster an interdisciplinary approach to patient care, bridging the gap between dentistry and general

medicine. This model has been demonstrated in other countries to improve patient outcomes and streamline healthcare delivery [5, 6].

Internationally, countries such as France and the United Kingdom have successfully implemented similar interdisciplinary programs. These countries emphasize continuous professional development, with over 70% of their dentists participating in ongoing training. In contrast, only 30% of Moroccan dentists in rural areas engage in continuing education, primarily due to cost and logistical challenges. Addressing these barriers through subsidies and online learning platforms could significantly enhance professional development [4, 5].

The emphasis on research and innovation at FMPDF is another promising aspect of this program. Currently, Morocco's contributions to oral health research are minimal compared to neighboring Maghreb countries. Integrating research components into the curriculum can foster a culture of innovation, enabling practitioners to adopt evidence-based practices. For instance, studies from Tunisia and Algeria have highlighted the effectiveness of integrating digital dentistry and telemedicine in rural healthcare delivery—practices that could be replicated in Morocco.

To illustrate the disparities and potential improvements, diagrams and graphical representations are included. For example, a comparison of the dentist-to-population ratios in urban versus rural areas highlights the stark inequities. A bar graph of continuing education participation rates among Moroccan dentists compared to their counterparts in Algeria and Tunisia underscores the gaps in professional development [4, 7].

Additionally, a schematic diagram detailing the interdisciplinary care model at FMPDF showcases how collaborative efforts between various healthcare professionals can improve patient outcomes. These visual aids serve to reinforce the findings and provide a clearer understanding of the systemic issues and proposed solutions [4].

The dental medicine pathway at Fez represents a transformative shift in addressing Morocco's longstanding challenges in oral healthcare education, accessibility, and service delivery. This initiative is positioned as a keystone in achieving equitable healthcare distribution while fostering academic and professional excellence. This discussion explores the multidimensional impact of the pathway, providing an in-depth analysis of its potential benefits, challenges, and strategic importance [7, 8].

Addressing Regional Disparities

Morocco has faced persistent inequalities in healthcare distribution, particularly in oral health services. These disparities are rooted in the centralization of resources and opportunities in Rabat and Casablanca. Currently, 70% of dentists practice in urban centers, leaving vast rural and semi-urban regions underserved. This imbalance has perpetuated a cycle of limited access to care and poor oral health outcomes in marginalized communities [1, 2, 4].

The establishment of the Fez pathway addresses these disparities through [4]:

- **Geographic Redistribution:** By situating the faculty in Fès, the initiative strategically places training and resources closer to underserved populations in the central and northern regions. This decentralization encourages regional equity in service delivery.
- **Local Retention of Graduates:** Evidence suggests that students trained in regional institutions are more likely to practice in their local areas. The pathway is expected to strengthen the oral healthcare workforce in regions previously neglected, increasing the dentist-to-population ratio from the current 1.2 per 10,000 inhabitants.
- **Infrastructure Accessibility:** Advanced facilities and modern technologies, such as digital radiography (currently available in only 30% of clinics), will be made accessible to both students and practitioners, enhancing the quality of care delivered in rural areas.

Enhancing Educational Capacity

The capacity of Morocco's dental education system has long been constrained. With only two public dental faculties, Rabat and Casablanca admit approximately 300 students annually, far below the national demand. This limitation forces many students to seek private education, often at a prohibitive cost of 100,000–140,000 MAD per year, creating further barriers to entry for students from lower socioeconomic backgrounds [4, 6].

The Fez pathway aims to [2, 4]:

- **Increase Enrollment:** By introducing an additional public training institution, the program will expand enrollment capacity, alleviating the pressure on Rabat and Casablanca faculties. This will open opportunities for a larger and more diverse cohort of students.
- **Standardize Education Quality:** The Fez faculty incorporates simulation-based learning, which bridges the gap between theoretical knowledge and clinical skills. This innovation enhances practical training, ensuring graduates are well-prepared for contemporary dental practice.
- **Promote Interdisciplinary Training:** By integrating the Fès dental faculty with the existing Faculty of Medicine and Pharmacy, the program encourages interdisciplinary collaboration. This approach aligns oral health with general health disciplines, fostering a holistic understanding of patient care.

Strengthening Continuing Education

Continuing education is an essential component of professional development for dentists. However, rural practitioners in Morocco face significant barriers to accessing these opportunities. High costs and logistical challenges have resulted in only 20–30% of rural dentists participating in regular training programs [2].

The Fez pathway seeks to overcome these barriers by [2, 4]:

- **Creating Accessible Programs:** Regional accessibility will reduce the financial and logistical burdens for rural practitioners, enabling more dentists to participate in workshops and seminars.
- **Tailored Curriculum:** The faculty plans to offer targeted training sessions focusing on the unique challenges faced by rural and underserved populations, such as managing oral health in low-resource settings and preventive dentistry.
- **Leveraging Partnerships:** Collaborations with international institutions will bring global expertise to Fès, ensuring Moroccan dentists are equipped with cutting-edge knowledge and techniques.

Fostering Research and Knowledge Development

Scientific research is a critical driver of innovation in dental medicine, yet it has been underdeveloped in Morocco. The Fez pathway prioritizes research as a cornerstone of its mission, aiming to address both local and global challenges in oral health [7].

Key objectives include:

- **Addressing Regional Needs:** Research will focus on high-prevalence conditions in Morocco, such as dental caries (72–98%) and periodontal disease. Findings will inform policies and clinical practices tailored to the Moroccan context.

- Building International Collaborations: The faculty seeks to establish partnerships with institutions across the Maghreb and globally, enabling shared learning and the development of innovative solutions to common challenges.
- Translating Research to Practice: Emphasis will be placed on ensuring that research findings are directly applied to improve clinical outcomes, bridging the gap between academia and practice.

Challenges and Limitations

While the initiative is promising, it faces several challenges that could hinder its full realization [4, 8]:

- Recruitment of Educators: Attracting qualified faculty members and clinical trainers, especially in specialized fields such as orthodontics and oral surgery, is crucial for the program's success.
- Retention of Graduates: Ensuring that graduates remain in underserved areas requires a robust strategy, including financial incentives, career advancement opportunities, and professional support networks.
- Sustainable Funding: The faculty's reliance on state funding (2 billion MAD allocated for the next decade) necessitates careful financial planning to maintain infrastructure, update technologies, and ensure affordable tuition fees.
- Student Diversity and Inclusion: Efforts must be made to recruit students from diverse socioeconomic backgrounds, ensuring that the benefits of the program extend to all regions of Morocco.

The ripple effects of the Fès pathway extend beyond the immediate scope of dental education:

- **Economic Development:** By creating jobs and attracting healthcare professionals to Fez, the program is expected to stimulate local economic growth.
- **Policy Alignment:** The initiative supports Morocco's broader healthcare strategy, including the creation of Territorial Health Groupings (Groupements Sanitaires Territoriaux), which aim to decentralize healthcare services.
- **Regional Leadership:** The pathway positions Morocco as a leader in oral healthcare in the Maghreb, providing a model for other nations facing similar challenges.

In summary, the dental medicine pathway at Fez is a visionary initiative poised to transform Morocco's oral healthcare landscape. By addressing regional disparities, expanding educational capacity, and promoting research and continuing education, it offers a comprehensive solution to the nation's challenges. However, its success depends on strategic implementation, sustained investment, and stakeholder collaboration. With these elements in place, the program has the potential to set a benchmark for equitable, high-quality dental education and care in Morocco and beyond [5, 7].

Despite the promising prospects of the FMPDF initiative, its long-term success will depend on several structural factors.

Workforce redistribution policies, financial incentives for rural practice, and sustained investment in infrastructure will be necessary to ensure that increased training capacity effectively translates into improved access to oral healthcare. Without complementary health system reforms, expanding dental education alone may not fully address existing regional disparities.

Limitations

This review has several limitations. First, as a narrative review, the study relies on available literature and policy documents rather than primary empirical data. Second, some workforce statistics may vary across sources due to differences in reporting periods. Third, projections regarding the future impact of the FMPDF program remain speculative and will require longitudinal evaluation once the program is fully operational. Despite these limitations, the review provides a valuable synthesis of current evidence and policy developments related to dental education in Morocco.

Conclusion

The establishment of the dental medicine pathway at Fès reflects Morocco's commitment to equitable healthcare development. By addressing regional disparities and integrating interdisciplinary approaches, the initiative is poised to transform oral healthcare delivery. Continued investment in education, infrastructure, and research will be critical to its success, ensuring that it meets the nation's evolving health demands.

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