

## Review Article

# Overview of oral and dental healthcare in Dubai health authority: status, gaps, and initiatives, 2016-2021

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### ABSTRACT

This article provides an overview of the current status of oral and dental healthcare within the Dubai health authority (DHA) and highlights the gaps and the impact of initiatives implemented between 2016 and 2021. The oral and dental care program, part of the Dubai health strategy 2016-2021, aimed to enhance oral and dental care by ensuring widespread access to high-quality treatments and effective prevention programs. To gain a comprehensive understanding, an initial assessment of the current state of oral and dental care was conducted with the assistance of an external consultant. This assessment encompassed a review of existing clinical guidelines, frameworks, and awareness initiatives, as well as an evaluation of the patient journey and accessibility. While noteworthy innovative measures were already in place, certain gaps were identified, and recommendations were proposed to address them. Subsequently, specific initiatives and programs were implemented in alignment with these recommendations to bridge the identified gaps. A notable achievement was the development of the Dubai dental protocol, which governs a patient-centered model of care and emphasizes a life-course approach to dental health promotion, addressing the diverse stages of life from pre-pregnancy to geriatric care.

**Keywords:** Current status, Oral and dental care, Initiatives

### INTRODUCTION

The Dubai health authority (DHA), developed a comprehensive strategy (2016-2021) in line with the Dubai plan 2021 to enhance the health system with the mission of “transforming Dubai into a leading healthcare destination by fostering innovative and integrated care models and by enhancing community engagement”.<sup>1</sup> The strategy aims to provide the highest quality medical care to patients with chronic diseases, promote early detection, and raise awareness about the importance of regular check-ups.

One of the key programs within this strategy focuses on enhancing the current oral and dental care systems<sup>2</sup>. The goal is to improve oral health outcomes and ensure that individuals have access to high-quality treatments and effective prevention programs for dental care. The oral

and dental care program<sup>3</sup> includes four initiatives, namely-Developing awareness programs in dental and oral health, implementing oral health prevention and screening programs, launching a Dubai dental protocol, and fostering innovative solutions for dental care services and treatment.

Over the past seven decades, Dubai has witnessed significant advancements in healthcare services, characterized by an expansion in capacity, adoption of advanced technology, and policy development, resulting in the current healthcare landscape. DHA consists of 5 hospitals, and 12 primary healthcare centres (PHC) within the public sector.

The health regulation sector at DHA is accountable for regulating all health facilities and healthcare professionals in Dubai. The dental services department

(DSD) of DHA, was established to offer optimal dental healthcare using the latest advancements in the field. Alongside general dental and dental hygiene services, specialty dental services such as endodontics, prosthodontics, pedodontics, periodontics, orthodontics, and oral and maxillofacial surgery are provided. In spite of the availability of access to quality dental care in different locations in Dubai, it has been reported that the caries prevalence among children in Dubai is high.<sup>4-6</sup>

In order to identify the gaps and overcome this, it was crucial to implement the oral and dental care program, which follows an ecosystem approach involving various stakeholders and hinges upon system enablers such as patient journey mapping, robust IT infrastructure, workforce development, clinical governance, and risk management. The consulting company, OCSHI solutions and services, and the health innovation advisory, renowned pioneers in healthcare information technology, collaborated with DHA to conduct the current status and gap analysis, leveraging their extensive experience in similar exercises across multiple healthcare systems. To assess the current state of the Dubai dental ecosystem, benchmarking criteria from the USA, UK, and Australia were adapted to suit Dubai's strategic, clinical, and social circumstances.<sup>7-9</sup> Gap analysis was conducted, and evidence-based recommendations were derived from renowned organizations.<sup>10-13</sup>

This article provides a comprehensive overview of the DHA's strategy (2016-2021) to enhance oral and dental healthcare as part of their overall healthcare system.

## **METHODS APPROACH**

A comprehensive mixed methods approach was employed in the initial assessment of dental care services in Dubai. The assessment aimed to evaluate the current status of dental care service delivery, clinical governance and risk management arrangements, DHA infrastructure readiness, and the governance structure of dental care services. Several key areas were identified for data collection and gap analysis:

### ***Dental care service delivery model***

The existing model of dental care service delivery was examined to identify gaps and areas for improvement. Data was collected through observations, interviews with dental care providers, and analysis of patient records.

### ***DHA infrastructure readiness***

The readiness of DHA infrastructure to support the implementation of oral care and health prevention projects was evaluated. This involved assessing the availability and functionality of dental facilities, equipment, and resources.

### ***Stakeholder aspirations***

The aspirations of various stakeholders, including patients, clinical care providers, organizational and system enablers, and private providers, were considered to understand their perspectives and engagement levels. Stakeholder engagements were conducted using the Kloosterman model of stakeholder mapping, and interviews were conducted to gather insights into their roles, interactions with oral and dental services, gaps in the current system, and recommendations for improvement.

### ***Oral health education and promotion frameworks***

The effectiveness of existing oral health education and promotion frameworks was assessed, and areas for improvement were identified. Focus groups, staff engagement meetings, and surveys were conducted to gather input from elderly individuals, dental staff members, and the general population. The surveys included questions on demographic information, performance standards, trainings, collaboration, and perspectives on increasing dental service utilization.

### ***Clinical guidelines***

Existing clinical guidelines related to dental care services were reviewed and evaluated for their comprehensiveness and relevance. Interviews were conducted with dental quality facilitators and administrative and clinical dental staff to assess the content, revision status, and coverage of the guidelines. Gaps were identified, and recommendations were made for missing guidelines and risk assessment and screening guidelines for common oral diseases.

### ***Patient journey and access to dental services***

The patient journey and access to dental services, including appointment systems and waiting times, were examined and analyzed. Patient feedback on the appointment system was collected through surveys and interviews.

### ***Programs implemented***

Programs implemented over the past years to enhance dental services were studied and documented. This involved analysing data on digital solutions, nitrous oxide use, teeth whitening, patient satisfaction, waiting times, and overall costs.

The collected data was analyzed using appropriate statistical and qualitative analysis methods. The findings were used to identify gaps and areas for improvement in oral and dental healthcare in Dubai, and recommendations were provided to address these gaps.

## CURRENT STATUS REPORT

The DHA had implemented various initiatives to improve oral health outcomes, targeting different population groups and focusing on prevention, awareness, and access to care.

### *Initiative 1: Dubai smiles healthy (DSH) program*

The DSH program, launched in 2016, aimed to enhance the oral health of children in Dubai.<sup>14-16</sup> It consists of three key components: School practice program, school nurse training program, and child health program. The school practice program delivers preventive care services and oral health education in schools, covering proper tooth brushing techniques, dietary advice, fluoride varnish application, and dental visit familiarization.

The school nurse training program empowers school nurses to promote oral health and prevent oral diseases through comprehensive training sessions.

The child health program targets infants, young children, and parents, providing education on oral health practices, promoting healthy lifestyles, and offering regular check-ups and fluoride application.

The "My smile" toothbrushing program equips students with necessary oral hygiene tools and encourages daily tooth brushing. Children were provided with free toothbrushes appropriate for their age. Tooth brushing was supervised by the school nurses and recorded in customized tooth brushing charts. Positive feedback from parents and high compliance among students have been reported, although challenges related to storage facilities, disruptions in schedules, and cooperation from teachers and administrators have been identified.<sup>17,18</sup>

Overall, these initiatives aim to raise oral health awareness, prevent oral diseases, and promote healthy oral habits among children in Dubai.

### *Initiative 2: Awareness campaigns and surveys*

Dubai has conducted targeted awareness campaigns to increase oral and dental care awareness among diverse population groups, including expectant mothers, infants, school-going children, people of determination, and workers.<sup>3,19,20</sup>

Surveys have been conducted to assess oral health awareness and practices, identifying areas for improvement, such as the frequency of brushing teeth and utilization of dental services. Additionally, focused surveys were conducted to evaluate the effectiveness of awareness campaigns and found that although participants were aware of oral health importance, actual practice was low.

A cross-sectional study assessed the oral health status, oral hygiene practices and dental treatment utilization among Pregnant women in Dubai, and noted that significant number of pregnant women experienced dental problems while only a few sought treatments.<sup>21</sup> Another study aimed to develop a pre-diabetic screening chart for dental settings. It sought to create a simple and cost-effective method for identifying pre-diabetic individuals.<sup>22</sup>

Individuals suffering from Thalassemia were screened to assess their oral and dental health status. Subsequently, the patients were referred to the DHA dental clinics for further treatment.<sup>23</sup> Overall, these surveys and initiatives aimed to enhance oral health outcomes in Dubai by improving awareness, providing specialized care, and developing evidence-based guidelines.

### *Initiative 3: Clinical guidelines and access to care*

While clinical guidelines were available, they lacked structure and specificity for different population groups. Standardized Clinical protocols were also absent.

In previous years, the department identified waiting times for obtaining a dental appointment with the general dental practitioner as a critical barrier to accessing care. Consequently, the appointment system was abolished in 2015 and a walk-in system was introduced, enabling same-day access to dental care.<sup>19,24</sup> However, the high patient influx accessing this service resulted in an increased duration of time spent by the patients in the clinic waiting area prior to being treated by the general dental practitioners.<sup>25</sup> Therefore, the walk-in system requires re-evaluation to optimize access and reduce waiting time in the clinic.

### *Initiative 4: Innovations in dental care*

The DHA had implemented innovative approaches to enhance dental care and improve patient experience.

These include the use of digital dental technology, had a positive impact on waiting times quality of work and patient satisfaction.<sup>26,27</sup>

Nitrous oxide conscious sedation was introduced in the pediatric clinic governed by specific clinical guidelines used to reduce fear and anxiety in children during dental treatment.<sup>28</sup>

Teeth whitening services had also been introduced, meeting the high demand from the community and generating revenue.<sup>29</sup>

The dental hygiene unit provides pit and fissure sealants as a preventive measure to reduce the dental caries.<sup>30</sup>

Additionally, the introduction of a "smart clinic" allowed the community to seek advice on oral health and dental

care, especially for children and individuals with systemic diseases, while also providing access to quality dental care.<sup>31</sup>

Oral and dental care is a priority program with political support. Dental services are well-located and equipped, with a mature health regulation and governance framework. The integration of oral health promotion into the overall health promotion strategy demonstrates a holistic approach.

**GAPS AND RECOMMENDATIONS**

Based on the current status assessment the consulting company identified gaps and proposed the recommendations. The Dental services department then developed and implemented specific programs to bridge the gaps and improve services which are summarized in the Table 1 below.

**Table 1: Gaps, recommendations and implementation of initiatives.**

Gaps	Recommendations	Initiatives to overcome gaps
<b>Long Waiting time for appointments</b>	Develop an appointment system with scope for same day appointment	Hybrid appointment system
<b>Lack of standardised approach to clinical dental care</b>	Develop standardised guidelines for clinical dental care	Specialty based guidelines in Dubai dental protocol
<b>Lack of specific guidelines for approach and management of oral health problems in children</b>	Develop standardised guidelines and programs for management of oral health problems in children	Community based guidelines in Dubai dental protocol
<b>Lack of specific guidelines for approach and management of oral health problems in people of determination</b>	Develop standardised guidelines and programs for management of oral health problems in people of determination	Community based guidelines in Dubai dental protocol
<b>Lack of specific guidelines for approach and management of oral health problems in pregnant women</b>	Develop standardised guidelines and programs for management of oral health problems in pregnant women	Community based guidelines in Dubai dental protocol
<b>Lack of specific guidelines for approach and management of oral health problems in elderly</b>	Develop standardised guidelines and programs for management of management of oral health problems in elderly	Community based guidelines in Dubai dental protocol
<b>Lack of standardised health care advice, patient education materials and resources</b>	Develop educational materials and resources for patients	Patient education materials and resources available in Dubai dental protocol
<b>Lack of a comprehensive approach to patient care</b>	Develop a dental home for complete management of oral and dental care	Patient-centred model of care

**IMPLEMENTATION OF INITIATIVES**

An initial assessment of the current status of dental care services in DHA highlighted the need for specific initiatives and programs to address existing gaps. This is an overview of the achievements made thus far and outlines future directions for further improvement.

**Hybrid appointment system**

To reduce waiting times for dental specialist appointments, DHA took significant steps, such as increasing the number of clinics and expanding services offered at PHCs across Dubai.<sup>29</sup> Pilot project implementing “hybrid” appointment system was launched in 2 PHCs, combining scheduled appointments with same-day walk-in appointments. This innovative approach aligns with concept of medical home and was extended to all health centers following positive feedback from both staff and patients. Through this system, patients can book appointments in advance via call center/ authority’s medical records platform, allowing

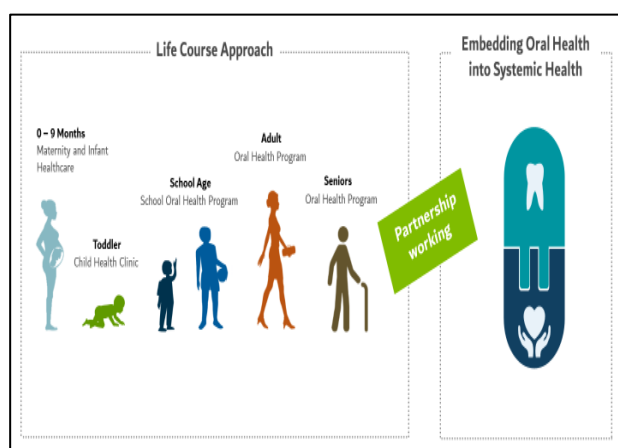
them to select their preferred dentist and schedule their required services. Alternatively, emergency patients can access dental care without prior appointments, reducing waiting times and enhancing overall access to care.<sup>32</sup>

**Dubai dental protocol**

As part of the oral and dental care program's Dubai strategy 2016-2021, the DHA developed and launched

the Dubai dental protocol.<sup>33</sup> This comprehensive initiative aims to standardize dental practices based on identified best practices and a uniform approach to dental care. The protocol includes guidelines, screening and referral frameworks, as well as patient education and resource materials. These guidelines cover various specialties, including restorative dentistry, endodontics, periodontics, oral and maxillofacial surgery, prosthodontics, implant dentistry, pediatric dentistry, orthodontics, and community dentistry. Guidelines for community dentistry, cater to comprehensive oral care and

management of special population groups like children, pregnant women, patients with non-communicable diseases, people of determination and elderly patients. Additionally, guidelines for Infection control in dentistry and guidelines for dental radiology are available. The guidelines for Dubai dental protocol were developed by the dental services department and reviewed by the health policies and standards department of the health regulation sector of DHA. With onset of the COVID-19 pandemic, guidelines for provision of dental services during COVID-19 were also developed to ensure provision of the highest levels of safety and quality Dental Services, including several aspects like scope of service, patient triaging, protocols to be followed in the dental clinics, management of emergency and non-emergency patients and infection control and hygiene precautions.<sup>34</sup> These guidelines formed framework to provide effective, efficient, safe and high-quality dental services during COVID-19 in government and private dental sectors in Dubai.



**Figure 1: Patient-centered model of oral and dental care.**

Patient-centered model of care: The strategy implemented to enhance dental care services in Dubai adopts a systemwide approach, focusing on prevention and health literacy improvement through increased awareness. It embraces a life course perspective on dental health promotion, addressing various stages of life from pre-pregnancy to geriatric care.<sup>3</sup> Early detection, access to care, dental management and treatment, as well as organizational and information systems, are prioritized. This patient-centered model of care (Figure 1) strengthens the link between oral and systemic health, ultimately improving oral health outcomes across an individual's lifespan.

## CONCLUSION

The overview of the current status of dental care service delivery encompassed a comprehensive review of policies, procedures, legislation, clinical guidelines, stakeholder involvement, clinical governance, and risk

management arrangements. Gaps were identified, and recommendations were made for future developments based on international evidence-based benchmarking criteria. Initiatives like Dubai dental protocol to enable the patient-centered model of care were implemented.

Moving forward, continuous evaluation and refinement of initiatives, along with ongoing collaboration with stakeholders, will be crucial to further enhance dental care services in Dubai and promote optimal oral health for the population.

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