ISSN: 2577 - 8005

Research Article

Medical & Clinical Research

Exceptional Design for an Adult Oral Health Screening Program, Qatar

Najat Abdrabbo Alyafei*[1] and Sara Gibreel[2]

[1]*Head of Oral Public Health- Directorate of Operations, Primary Health Care Corporation, Qatar.*

[2]*Clinical Program Manager, Hamad Dental Center, Hamad Medical Corporation, Qatar*

***Corresponding author**
Najat Abdrabbo Alyafei, Head of Oral Public Health- Directorate of Operations, Primary Health Care Corporation, Qatar

Submitted: 02 Nov 2020; **Accepted**: 10 Nov 2020; **Published**: 23 Nov 2020

Citation: *Najat Abdrabbo Alyafei and Sara Gibreel (2020). Exceptional Design for an Adult Oral Health Screening Program, Qatar. Journal of Medical & Clinical Research 5(10):272-279.*

Abstract

Introduction: *As a result of an increased life expectancy and reduced fertility, it is anticipated that by 2050 about half of the world's population will be aged 60 years and above. This increased longevity has posed a challenge of adding health to life as progressive improvements in older people's health that translate to longevity may be stalled. Physiological aging is usually associated with multiple chronic diseases, frailty, polypharmacy, and the loss of dependency and autonomy for daily living activities. Besides, reduced dexterity, impaired vision, and lower tactile associated with physiological aging pose an increased risk to oral hygiene. Furthermore, older adults, especially those with cognitive impairment, have more compromised oral health.*

Aims and Objectives: *The aim of this heuristic designed project is to screen all adult patients, including those with a history of chronic diseases living and seeking dental services at the public sectors and other sectors in Qatar. To improve the treatment of oral health diseases, the overall oral health of older adults, and to develop a data repository of oral diseases in the elderly population under one national umbrella for the first time in Qatar.*

Project Design: *This project is consisting of two tests, pre-test, and post-test design. The use of this design will allow us to understand the oral health challenges in Qatar. This screening's expected outcome will reveal the critical factors and challenges that affect the oral health logistic system. It will also help in improving and identifying all oral health problems. Help in testing whether Qatar's older population's oral health screen effectively reduces the risk of poor oral health among this group. Oral health screening will be implemented as a regular intervention that will be delivered using the Oral Health Assessment Tool (OHAT) such as tongue, lips, saliva, dental pain, natural teeth, gums and oral tissue, and dentures.*

Expected Outcomes: *The project is anticipated to support the practical application and real operational status of healthcare settings. Besides, it is anticipated that this project will optimize the chances for maximum impact once the program is implemented. Furthermore, it is expected that the project will include an essential part for decision making, evaluation, and justifications and will also hold key evaluation features for program impact and monitoring. Another expected outcome of this project is its ability to document programs effectively and identify significant opportunities for improvement with collected data. Finally, it is expected that this project will result in a model outline that will be implemented in both Qatar and across the globe to help merge the public sector and other sectors' dental health data on a national level.*

Recommendation: *Since the number of adults with a history of chronic diseases and have oral conditions is still unknown in Qatar due to the lack of a database, the authors recommend this project to help in building the background and database to assist dental practitioners, and policymakers develop specific and targeted programs that will support and provide treatment for the targeted population to improve the quality of life.*

Keywords: Adult, elderly, geriatric, oral health, screening, oral assessment tools, dental, Qatar.

Introduction

Oral health is integral to every individual overall health and well-being [1, 2]. In support of this statement, the SA Health Report elucidates that oral health and diseases are closely linked to general health. Since the mouth serves as a portal for disease, gum disease and tooth decay share links with several chronic health conditions such as cerebrovascular, cardiovascular, and respiratory diseases, experienced by the older population [3]. Usually, poor oral health is linked to breast cancer, stroke, ulcers, pneumonia, cardiovascular, and autoimmune diseases [4, 5]. It reveals that oral health problems are most prevalent among older adults. The resultant poor oral health among this group are common problems that have been documented in reviews and studies from different scholars internationally [6]. Particularly, poor oral health among older adults has been explained in high levels of dental caries, tooth loss, oral cancer, xerostomia, and periodontal disease [7]. Research reveals that although older people's oral health problems are rapidly increasing, both are preventable and treatable [8]. However, these problems remain underdiagnosed and untreated [9]. The management, prevention, and treatment of oral health conditions can be achieved by routine oral health screening, assessment, oral health planning, and the support of daily oral care by dental professionals. On the same note, Researchers urge that regular oral health screening is vital for promoting, protecting, and improving the older population's oral health [10].

The proposed National Adult Oral Health Screening Project (NAOHSP) seeks to screen all adult patients, including those with a history of chronic diseases living and seeking dental services at the Primary Health Care Corporation that host 27 health centers, Dental Centre in Hamad Medical Corporation (HMC), Private Dental Clinics, Army and Police dental clinics, Qatar Gas, Qatar Petroleum, and any semi-governmental or corporation that have dental clinics. Notably, there are no data on patients with chronic diseases seeking dental services either in public or other healthcare settings in Qatar. In addition, no electronic system has been implemented to merge dental data from both public sector dental clinics and other sectors in the country. As such, other dental clinics sectors in the country cannot access the public dental system to check their files. Furthermore, the number of adults with a history of chronic diseases and having oral conditions is still unknown in Qatar due to the lack of a database. Conducting this screening will build the background and database to help dental healthcare practitioners and policymakers develop specific and targeted programs that will support and provide treatment for all adult and elderly patients. Other benefits for this screening will include providing a benchmark of oral health for the adults with chronic diseases in Qatar seeking dental services at the primary health care centers, identifying the need for a specialized oral health care program for patients with chronic conditions, and identifying access to dental care issues related to patients with chronic diseases. Moreover, the project will provide comprehensive information regarding the oral screening process being offered (including possible harms, consequences, and limitations, as well as potential benefits). Lastly, it will help improve the quality of life for adult and elderly patients through early detection and maintaining their natural teeth for a longer time.

Aims and Objectives

The main aim of the proposed project is to screen all adult and elderly patients, including those with a history of chronic diseases living and seeking dental services at the Primary Health Care Corporation that host the health centers, Dental Centre in Hamad Medical Corporation (HMC), Private Dental Clinics, Army and Police dental clinics, Qatar Gas, Qatar Petroleum, and any semi-governmental or corporation that have dental clinics.

The objectives of this program:

1. To identify patients with early stages of oral & dental diseases, including patients with comorbidities who are at a higher risk of oral disease and its complications.
2. To screen individuals and populations to prevent severe oral disease and/or severe conditions and provide dental care as needed.
3. To determine an essential plan for resource allocation practices in order to intervene and mitigate the burden of oral diseases among the elderly population in Qatar.
4. To determine the best ways of setting evidence-based priorities for early dental intervention for adults with chronic diseases in Qatar.
5. To benchmark against international prevalence and interventions of oral diseases among adults
6. To provide continuous data to monitor the trends of oral diseases among adults in Qatar- and modify interventions when required.
7. To standardize dental screening and documentation on the national level in Qatar.
8. To develop a data repository of oral diseases for elderly patients under one national umbrella.

The Screening Questions

The project can address the following research questions:

1. What early stages of oral & dental diseases, including patients with comorbidities, put them at a higher risk of oral disease and its complications?
2. How can individuals and populations prevent severe oral disease and/or severe conditions?
3. What is the essential planning-for-resource-allocation practices that can intervene and mitigate the burden of oral diseases amongst elderly adults?
4. What are the best ways of setting evidence-based priorities for early dental intervention for adults with chronic diseases in Qatar?
5. What are the international prevalence and interventions of oral diseases among adults in Qatar?
6. What are the trends of oral diseases among adults in Qatar?
7. How can dental screening and documentation be standardized?
8. How can the data repository of oral diseases for elderly patients be under one national umbrella?

Review of Literature

Oral Health

Oral health refers to the absence of defects, disorders, and diseases of teeth, mouth, and adjacent structures [11]. A healthy mouth is an invaluable and unique asset [12]. Researchers further added that a healthy mouth is an integrated component of life quality and may be considered a fundamental human right. Usually, oral health is determined by various factors such as the degree of oral hygiene, dental programs, accessibility to a dental healthcare professional, and oral health awareness in the general population [12]. Oral health is a significant element of the overall health and well-

being of individuals [13]. According to researchers, loss of teeth is directly linked to deteriorating diet and compromised nutrition, impairing health, and worsening existing health conditions [14]. Further urge that oral diseases impact individuals' appearance and speech and may lead to depression, anxiety, social stigma, and low self-esteem, which may inhibit opportunities for employment, education, and social relationships. The most common dental health problem is dental caries and periodontal diseases [13, 15].

Dental caries defines as a multifactorial disease caused by an interaction of environmental, biological, and social factors [13]. They emerge from a complex interaction of bacterial, host susceptibility, and diet. Usually, dental caries involves demineralizing the tooth's rigid structure by the acid produced by the bacterial in the biofilm of dental plaque on the tooth's surface. Notably, this acid production is triggered by a sugary diet and saliva in the form of ingested refined carbohydrates [16].

Further posits that the onset of dental caries results from dental plaque formation, which results from poor dietary habits, such as intake of fermentable carbohydrates, and poor oral hygiene associated with infrequent tooth-brushing with fluorinated toothpaste [17]. The fermentable carbohydrates in the mouth are metabolized by plaque bacteria, especially Streptococcus sobrinus and Streptococcus mutans to produce acids that diffuse into demineralized hard dental tissue [17]. As dental caries progress further, it results in pulpitis and cavitation or toothache, which, if untreated, can lead to tooth extraction. Dental caries can be rapid in children due to dentine's relative thickness and enamel in deciduous teeth compared to permanent dentition.

Oral Health in Qatar

Although oral health remains a significant health concern in Qatar, there are no published articles on the prevalence of oral diseases among elderly adults. The findings of a National Survey conducted in 2012 on 2,496 Qataris, where 1,443 were women and 1,053 were men, by the Supreme Council of Health (Ministry of Public Health at present), Qatar following WHO recommendations revealed that the self-perceived oral status of about 40% of the participants was either "poor" or "average" instead of "good." As such, this provides strong evidence that oral health is a significant public health problem in Qatar [18].

Oral health in Qatar is influenced by the interplay of behavioral, biological, socio-economic, political, and behavioral factors [18]. The interaction between the socio-economic and biological factors significantly impact oral health. Usually, socio-economic status in terms of education and income and the biological factors, such as bacterial load existence affects oral health, particularly of the minority groups [19]. With regards to behavioral factors and oral health, research reveals that most of the oral health problems are associated with lifestyle behaviors. For instance, failure to brush teeth after eating may lead to oral health problems. Also, the lack of political attention contributes to oral health problems. Notably, global oral health has been neglected, which negatively impacts political support towards the implementation of prevention interventions for oral health diseases. Further reveal that Arabs use different methods, including herbs, to clean teeth and treat oral pain [20].

Global Effects of Poor Oral Health

It is currently acknowledged that oral health conditions are a global epidemic and a crucial issue in the health sector that affects nearly all people during their lifetime [12]. Statistics indicate that nearly 3.9 billion people are suffering from this epidemic, and 5 percent to 20 percent of adults worldwide are affected by severe periodontal disease [21]. An assessment has shown that close to 90 percent of people worldwide suffer from different forms of oral health conditions during their lifetime. Therefore, this problem can be termed as a significant worldwide burden that has a huge impact on people's everyday lives and economic progress since millions of schools and working hours are lost annually all over the globe [12].

The most common chronic oral diseases include tooth decay and periodontitis. In most European nations, around 13 and 36 percent of their citizens aged 65-74 years have their entire teeth removed due to oral conditions [22]. When it comes to the US, 53 million citizens survive with untreated caries of their permanent teeth, whereas 25% of grown-ups of age between 65 years and above have lost their teeth due to the untreated oral conditions [23]. From the 1990s, the adverse effects of tooth decay and periodontitis have escalated remarkably [12].

The Global burden of diseases (GBD) carried out research in 2010 that presented the worldwide burden of early mortality and morbidity. This study targeted 291 diseases and injuries, 1160 sequelae, and 67 risk factors in 187 nations in 1990 and 2010. The data gathered from the study indicates that tooth decay, gum disease, cleft lip and palate, edentulism, and oral cancer were all responsible for 18 814 000 disability-adjusted life-years. This meant that there was an average increase of 20.4 percent as compared to the year 1990. From the data, it was also established that periodontitis, dental caries, and oral cancer's global burden had increased by an average of 45.6 percent, unlike non-communicable diseases (25 percent) such as diabetes mellitus, cardiovascular disease, and neoplasms, which had averages or 25, 27.3 and 69 percent respectively. However, there is declination in the disability-adjusted life-years due to cleft lip and palate and edentulism [24, 41]. It is worth noting that 3.9 billion people globally were affected by the prevalence of untreated tooth decay, severe periodontal disease, and severe tooth loss. Untreated tooth decay in adults, which had an estimated 35 percent prevalence, was the most prevailing condition among all 291 diseases included in the research. Also, periodontitis (10.8 percent), untreated decay in primary teeth (9 percent), and severe tooth loss (2.3 percent) were 6th, 10th, and 36th positions [25, 26]. Furthermore, the study also indicates that untreated tooth decay was the main source of disability-adjusted life-years in youth below 35 years while acute periodontal disease and tooth loss was found to be the leading disease burden for people with years ranging from 35 to 59, and the aging people with 60 years and above [25]. Traumatic dental injuries also an additional constituent of oral disease burden in children and aging people with an amplified prevalence and costly treatments in developed and developing nations [11].

Older Population and Overall Health

Currently, populations across the globe are aging due to changes in mortality rates and fertility, and the process is significantly

advanced in industrialized nations [27]. Further reveal that due to the increased life expectancy and reduced fertility, it is anticipated that by 2050 about half of the world's population will be aged 60 years and above [7]. This increased longevity has posed a challenge of adding health to life as progressive improvements in older people's health that translate to longevity may be stalled. Physiological aging is usually associated with multiple chronic diseases, frailty, polypharmacy, and the loss of dependency and autonomy for daily living activities. Besides, reduced dexterity, impaired vision, and lower tactile associated with physiological aging pose an increased risk to oral hygiene [28]. Researchers added that older adults, especially those with cognitive impairment, have more compromised oral health [29].

On a different note, the 2013 study on the update of the burden of disease, cited by a researcher, reveals that the world population's increased life expectancy is associated with living with a disability [27]. Besides, researchers urge that demographic transition associated with the aging population constitutes a significant challenge for health authorities worldwide since disease patterns shift concurrently [7]. In its Health Report 2002, World Health Organization analyzed the worldwide burden of diseases and the major risks of disability, risks, and death. According to the findings, the prevalence rate of non-communicable chronic conditions, such as chronic respiratory diseases, cardiovascular disease, cancer, diabetes, and respiratory disease, increases dramatically with age [7]. Thus, this may be used to partially explain why these conditions are increasingly becoming the leading cause of mortality and disability globally. Usually, increased life expectancy without the improved quality of life is attributed to a direct impact on public health expenditures. It is currently becoming a contemporary issue of concern in the public health sector.

Older Population and Oral Health Conditions

Older adults' oral health is vital for comfort, functioning, communication, and an essential component of overall health. The study revealed that good oral health among older adults is paramount for maintaining adequate oral function, pain and discomfort prevention, sustaining social interaction, controlling systemic or localized inflammation, and preserving life quality. Since oral health is an integral part of individuals' general health and well-being, and that major oral diseases and chronic systemic diseases share common risk factors, it is important to promote oral health prevention [8]. Further, a study was done by WHO revealed that improving oral health among the older population is a priority action area in the WHO Global Oral Health Programme (GOHP) [7]. Particularly, disease prevention, age-friendly oral health care, and oral health improvement are major concerns to WHO. Notably, in 2007, the World Health Assembly Resolution emphasized intervention for the older population's oral health. In the same year, it initiated a worldwide survey to pinpoint the needs for improving the older population's oral health.

Research reveals that older people's oral health, defined as those aged 65 years and above, is generally poor, with increased prevalence of periodontal diseases, incremental tooth loss, dental caries, and dry mouth problems [28-30, 7]. Notably, the world's population is aging rapidly, and life expectancy is increasing [31]. As such, this has led to a higher number of older dental patients than in the past. Poor oral health among older adults has been explained, particularly in high levels of dental caries, tooth loss, oral cancer, xerostomia, and periodontal disease[7]. Among the adverse effects associated with poor oral health include reduced chewing performance, weight loss, low self-esteem, constrained food choice, impaired communication, and poor well-being. Besides, living longer is associated with increased challenges when it comes to meeting the complex healthcare needs of many older people and providing them with a high quality of life [9]. Advanced age is also associated with impairment of physical and cognitive capabilities, resulting in lesser optimal oral hygiene, leading to dental diseases.

Moreover, a study reveals that poor oral health is associated with a greater risk of frailty, which is a significant healthcare issue in the aging population [32]. By definition, frailty refers to the state of vulnerability in older age to adverse health outcomes such as hospitalization, functional decline, long-term care, disability, or death [32]. Furthermore, poor health is reported to impact mortality, morbidity, and patients' recovery time after treatment [33]. With the increased risks associated with oral health, improvement of oral health has become the leading population health goal [34]. Also, oral diseases may result in pain, decreased quality of life, and functional limitations [31].

Research reveals that older people's oral health problems are both preventable and treatable [8]. The management, prevention, and treatment of oral health conditions can be achieved by routine oral health screening and assessment, oral health planning, and the support of daily oral care by dental professionals [10]. Notably, regular oral health screening is vital for promoting, protecting, and improving the population's oral health. Besides, the early diagnosis of oral conditions is crucial for avoiding long-term effects and short-term complications of advanced disease. Usually, dental screening aims to detect and intercept disease at a stage earlier than the individual would normally present for treatment by educating the community about the condition and its future complications. Since the treatment of oral diseases is costly, reducing oral disease morbidity through screening implies potential cost benefits, both in terms of lower treatment costs and productivity losses. Notably, the benefits of early diagnosis and intervention can be reaped for sustainable oral health through these years and to the future. World Health Organization 2003 considers dental screening as an efficient and effective way to reach all communities.

General Health Screening

Screening programs are developed for the general public. They entail asking questions and performing tests to establish healthy people who might be at a greater risk of contracting a condition [35]. The advantages of such a program include improved disease projections, preservation of resources, and the development of less complicated treatment approaches [10].

There have been task forces in different countries that have provided evidence-based endorsements for screening programs. Examples include the US Preventive Service Task Force and the Canadian Task Force on the Periodic Health Examination, which endorsed the provision of preventive care services like screening programs to special groups such as expectant women, children as well as adults [36, 37]. Australia, as well as a lot of European Union nations, provide lifetime screening services to their populations

[35, 38]. Nevertheless, these task force groups did not provide any proof to support or oppose oral health screening. Even though the analysis of the efficiency of screening various diseases has been attempted, no evidence has been provided about oral health screening playing a crucial part in identifying tooth decay and periodontitis in their initial stages. Furthermore, the oral health screening program's capacity to decrease morbidity or mortality of oral diseases has not been proved [10, 39]. Information from well-designed and directed research is required to get evidence of how oral health screening program affects people.

Oral Health Screening

Oral health screening looks at the history of chronic diseases, presence of denture condition, untreated decay, examines the condition of the tongue and lips, and examining severe periodontitis, as evidenced by visible furcation involvement and mobility. Besides, it assesses the oral cleanliness, the status of saliva, and the presence of candidiasis and other oral lesions. Consequently, this intra/extra oral examination helps in deciding the treatment plan exclusively for each patient. Besides, the early diagnosis of oral conditions is crucial for avoiding long-term effects and short-term complications of advanced disease. National adult dental screening project aims to detect and intercept disease at a stage earlier than the individual would typically present for treatment by educating the community about the condition and its future complications. Moreover, since the treatment of oral diseases is costly, reducing oral disease morbidity through screening also implies potential cost benefits, both in terms of lower treatment costs and productivity losses. Notably, the benefits of early diagnosis and intervention can be reaped for sustainable oral health through these years and to the future. World Health Organization 2003 considers dental screening as an efficient and effective way to reach all communities. The proposed NAOHSP will assist the Qatari government policymakers, program planners at various levels, and administrators in the health sector to tailor appropriate adult screening programs for chronic patients, benefiting the adult with chronic diseases, the community without unnecessarily burdening.

Method

This section presents the design and methodology of NASOHP. The purpose of this project is to screen all adult patients age 18 to 90 years old, including those with a history of chronic diseases living and seeking dental services in all sectors in the country to help minimize the risks of poor oral health among older adults, reach out to all adult patients at the national level.

Project Design

Adopting an appropriate design to evaluate the project's effectiveness in minimizing oral health problems among older adults in Qatar will be imperative. One group of participants will be recruited for the pre-test and post-test design. Notably, one group pre-test and post-test design is a type of research design employed by behavioral scholars to determine the impact of an intervention or treatment on a given sample [40]. The use of this design will allow the project designers to discern what oral health challenges still prevail after the research subjects have been screened and appropriate medical care given to them so that the screening could be improved to identify all oral health problems. As a result, this will help establish whether Qatar's older population's oral health screen effectively reduces the risk of poor oral health among the elderly population. Oral health screening will be implemented as an intervention that will be delivered using the Oral Health Assessment Tool (OHAT) such as tongue, lips, saliva, dental pain, natural teeth, gums and oral tissue, and dentures.

Participants

This project's target adult and elderly population age 18 to 90 years old who is seeking dental services at the Primary Health Care Corporation, which host Health Centers (HCs), Dental Centre in Hamad Medical Corporation (HMC), Private Dental Clinics, Army and Police dental clinics, Qatar Gas, Qatar Petroleum, and any semi-governmental or medical corporations that have dental clinics. The participants will be from both genders and either healthy or have a history of chronic diseases. A random sampling technique will be used to recruit the participants for this project. This sampling technique will be preferred over the other sampling technique since it helps eliminate the possibility of bias and facilitates the recruitment of a well representative sample.

Data Collection Plan

Data concerning the clinical oral status will be collected during standardized dental screening, which will be performed by the dental practitioners who will receive training during the study procedures. The study participants who will be screened will first be required to complete a consent form regarding their participation in this project. Further, these participants will be screened to determine the level of their tooth loss and replacement, tooth wear, dental decay experiences, and signs of gum disease. Other components that will be screened will include the presence of dental plaque, horizontal tooth wear, occlusal units, dental calculus, and dental fluorosis. The project will be conducted in collaboration with the Primary Health Care Corporation that host the health centers, Dental Centre in Hamad Medical Corporation (HMC), Private Dental Clinics, Army and Police dental clinics, Qatar Gas, Qatar Petroleum, and any semi-governmental or corporation that have dental clinics. The central role of these institutions will be to coordinate the oral health screening and provide an adequate oral healthcare professional screening team to facilitate data collection. The oral healthcare professional screening team will include dentists, dental hygienists, and dental assistants, who will receive basic training for recording and documenting oral health status. Since the project will utilize the existing workforce to perform this screening during their daily schedule, there will be no cost associated with it.

Project Implementation Phases

The NAOHSP will be completed in two phases. The first phase will include pilot testing that will be completed within a period of six months. This phase will target and screen as an estimation of at least 30,000 patients. Besides, it will also target three PHCC health centers and three from the non-governmental sector. The second phase will involve the national implementation of the project, and during this phase, the project will screen at least 30,000 adult and elderly patients.

Examiner Training

The examination team of the project will comprise of two groups, the administrative support staff and the screening staff. The administrative support staff will comprise of project coordinators,

clinical training leads, and data analysts. On the other hand, the screening staff will include dentists, dental hygienists, and dental assistants. A separate training session will be conducted for each group, and each session will be expected to last for about 2-4 hours. The training requirements for Screening Program will require Oral Healthcare Professionals to undertake minimum basic training for recording and documenting oral health status. Training will begin with a half-day didactic session and discussion with the trainers, and the remaining part of the day will be devoted to clinical training. During the clinical training session, the screening team will be required to screen volunteers from a limited pool across at least four training sessions. Based on the number of individuals who will volunteer to undergo screening, the screening team will be required to screen them, and then the trainers will compare the results. Areas of interest will be discussed, and the examiners and trainers will explore the rationale for decisions. The differences will be identified and discussed, and the most common problems will be shown to the team. At the end of each training session, a tutorial will be held to clarify any outstanding issues.

Project Screening Procedure

Screening sessions will be scheduled to last for a duration of 10 minutes per visit or per dental professional. In case a slot extends to 30 minutes, the first 10 minutes will be used for screening, and the remaining 20 minutes will be used for treatment. Notably, all dentists and dental hygienists will be required to screen patients for oral and dental internally and externally. During the screening session, once an adult patient accesses a dental clinic, they will be required to check-in at reception. Then they will be directed to walk into a dental clinic where a dental assistant, dentist, and/or dental hygienist will receive them and greet him/her. The patient will then be given a consent form. If they accept the screening, they will continue with medical and dental history, dental screening, start/continue dental treatment, documentation, and dental re-appointment and/or referral if required. Similarly, after being given a consent form for the patients who will reject screening, they will then proceed with medical and dental history, start/continue dental treatment where needed, documentation, and dental referral if required (see figure 1).

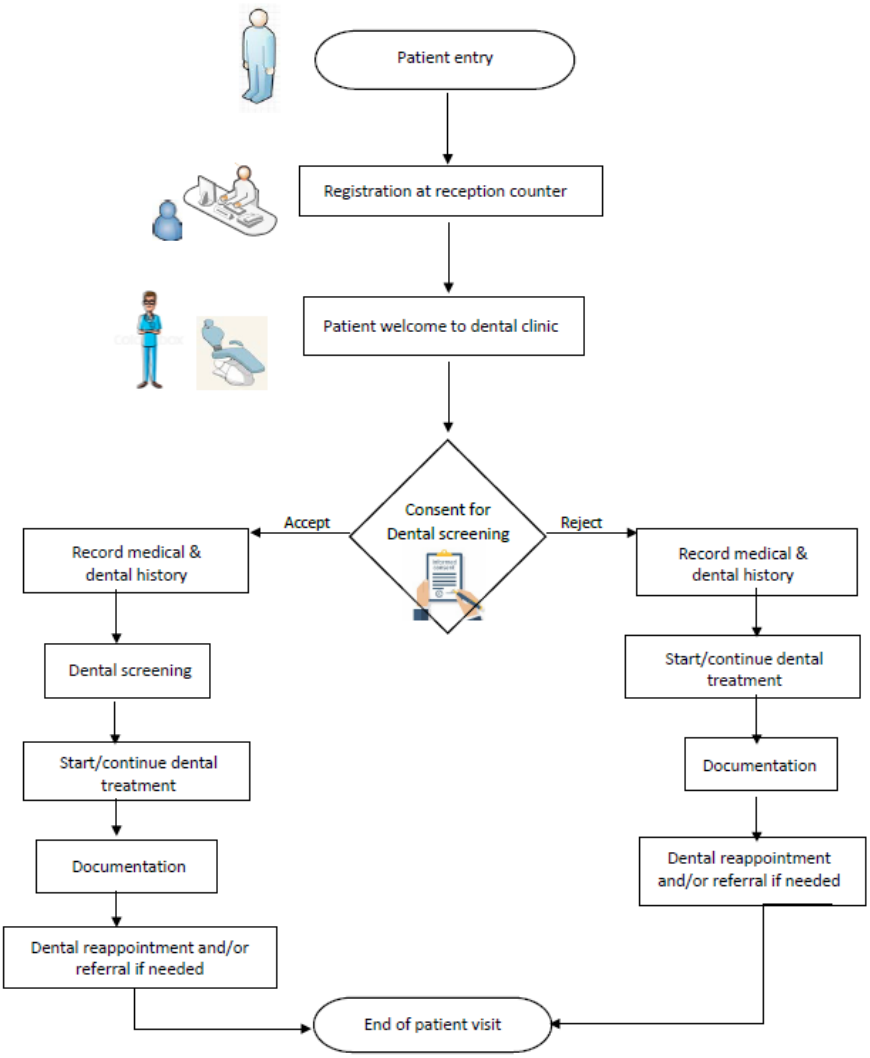

Figure 1: Adult Dental Screening Pathway

Monitoring

To ensure that the project will be effectively monitored, the authors ensure a routine collection of outcome data measures for analysis. Besides, the authors insist on tracking all aspects of the screening project through the following key performance indicators (KPIs).

1. Number of dentists, dental hygienists, and dental assistants trained to perform and record oral health screening
2. Number of adults whose oral health status has been recorded through the screening project
3. Number of adults who are identified at risk of oral disease and its complications
4. Number of adults identified with a periodontal problem (gum disease)
5. Number of adults identified with dental caries and DMFT recording
6. Number of diabetic adults who have oral health conditions
7. Number of cardiovascular disease adults who have oral health conditions
8. Number of Cancer adults who have oral health conditions
9. Number of adults who have tempro- mandibular disorder (TMD)

Reporting

The National Adult Oral Health Screening Program will report quarterly to the higher advisory committee at the Ministry of Public Health (MOPH) in Qatar.

Project Evaluation Plan

Improved oral health status will be considered a critical success for the screening and treatment procedures. The success level will be determined during the post-testing of oral health diseases. If the patient showcases a reduced extent of oral diseases, this will imply that the screening was effective and that the identified oral health problems were treated adequately. Once it is determined that adults' oral health screening is successful, this practice will be adopted across Qatar's dental healthcare institutions.

Project Expected Outcomes

The project is anticipated to support the practical application and real operational status of healthcare settings. Besides, it is anticipated that this project will optimize the chances for maximum impact once the program is implemented. Furthermore, it is expected that the project will include an essential part for decision making, evaluation, and justifications and will also hold key evaluation features for program impact and monitoring. Another expected outcome of this project is its ability to document programs effectively and identify significant opportunities for improvement with the help of collected data. Finally, it is expected that this project will result in a model outline that will be implemented in both Qatar and across the globe to help merge public and other sectors.

It is anticipated that the project will have both direct and indirect impacts. The direct impact of the project will entail sensitization. Notably, sensitization means that patients will gain a more profound awareness of their oral health status, which would lead to a reduction in the need for dental rehabilitation. Another anticipated direct impact is the improved quality of life. Early detection of compromised oral health status will facilitate early treatment, which will improve the patient's quality of life.

On the other hand, some of the anticipated indirect impacts of this project will be access improvement. After the project, individuals will be encouraged to prioritize access to dental care services. This will be facilitated by the direct impacts the project will have, such as improved quality of life. Besides, it is expected that this project will have improved utilization. Notably, the collaboration will generate a database for effective and efficient systems, which will result in improved utilization of dental services.

Recommendations

This project is unique and will help build the background and database to help healthcare practitioners and policymakers develop specific and targeted programs that will support and provide treatment for patients from 18-90 years old. Since the number of adults with a history of chronic diseases and have oral conditions is still unknown in Qatar due to the lack of a database, the authors recommend this project to be implemented in Qatar.

References

1. Bersell CH (2017) Access to Oral health care: A National Crisis and call for reform. American Dental Hygienists' Association 91: 6-14.
2. Masood M, Newton T, Bakri NN, Khalid T, Masood Y (2017) The relationship between oral health and oral health related quality of life among elderly people in United Kingdom. Journal of dentistry 56: 78-83.
3. Why Oral Health Care is Important for Older People | SA Health. Retrieved 19 October2020,from https://www.sahealth.sa.gov.au/wps/wcm/connect/public+content/sa+health+internet/clinical+resources/clinical+programs+and+practice+guidelines/oral+health/oral+health+care+for+older+people/why+oral+health+care+is+important+for+older+people
4. Vece L, Sutter R, Sutter C, Toulouse C (2016) Impacting vulnerable populations through integrating oral health care into nurse-managed health centers. The Journal for Nurse Practitioners 12: 629-634.
5. Shirley Gutkowski RDH (2011) The Biggest Wound: Oral Health in Long-Term Care Residents. Annals of Long-Term Care: Clinical Care and Ageing 19: 23-25.
6. Compton SM, Kline LA (2015) Oral health assessment and staff perspectives following a student practicum in long-term care settings. Can J Dent Hyg 49: 11-20.
7. Petersen PE, Kandelman D, Arpin S, Ogawa H (2010) Global oral health of older people-call for public health action. Community dental health 27: 257-267.
8. Kossioni AE, Hajto-Bryk J, Janssens B, Maggi S, Marchini L, et al. (2018) Practical guidelines for physicians in promoting oral health in frail older adults. Journal of the American Medical Directors Association 19: 1039-1046.
9. Bhagat V, Hoang H, Crocombe LA, Goldberg LR (2020) Incorporating oral health care education in undergraduate nursing curricula-a systematic review. BMC nursing 19: 1-13.
10. Ha JE, Jung SH, Jin BH, Lee BJ, Bae KH (2013) A Retrospective Cohort Study on the Association Between Periapical Abscess, Advanced Periodontal Disease, and the National Oral Health Screening Program Among Korean Adults. Asia Pacific Journal of Public Health 25: 420-428.
11. World Health Organization (2015) World report on ageing and health. World Health Organization.
12. Jin LJ, Lamster IB, Greenspan JS, Pitts NB, Scully C, et al.

(2016) Global burden of oral diseases: emerging concepts, management and interplay with systemic health. Oral diseases 22: 609-619.
13. Quadri MFA, Shubayr MA, Hattan AH, Wafi SA, Jafer AH (2018) Oral hygiene practices among Saudi Arabian children and its relation to their dental caries status. International Journal of Dentistry 2018: 1-6.
14. Skeie MS, Klock KS (2018) Dental caries prevention strategies among children and adolescents with immigrant-or low socioeconomic backgrounds-do they work? A systematic review. BMC Oral Health 18: 1-12.
15. Prasai Dixit L, Shakya A, Shrestha M, Shrestha A (2013) Dental caries prevalence, oral health knowledge and practice among indigenous Chepang school children of Nepal. BMC Oral Health 13: 1-5.
16. Garkoti PD, Singh RK, Rawat CMS, Pandey S (2015) Prevalence of dental caries among primary school children of Haldwani: a cross sectional study. Journal of Evolution of Medical and Dental Sciences 4: 7096-7100.
17. Strużycka I (2014) The oral microbiome in dental caries. Polish Journal of Microbiology 63: 127-135.
18. Tellez M, Zini A, Estupiñan-Day S (2014) Social determinants and oral health: an update. Current Oral Health Reports 1: 148-152.
19. Gomaa N, Glogauer M, Tenenbaum H, Siddiqi A, Quiñonez C (2016) Social-biological interactions in oral disease: A 'cells to society' view'. PloS One 11: e0146218.
20. Al-Salahi NAJS (1998) Oral health knowledge, attitudes, and behaviors of Qatari people. Master thesis, Old Dominion University, VA, USA.
21. Cheema S, Maisonneuve P, Al-Thani MH, Al-Thani AAM, Abraham A, et al. (2017) Oral health behavior and factors associated with poor oral status in Qatar: results from a national health survey. Journal of Public Health Dentistry 77: 308-316.
22. König J, Holtfreter B, Kocher T (2010) Periodontal health in Europe: future trends based on treatment needs and the provision of periodontal services–position paper 1. European Journal of Dental Education 14: 4-24.
23. National Institute of Dental and Craniofacial Research, National Institutes of Health, USA. Data and statistics. Available from: http://www.nidcr.nih.gov/DataStatistics, 2015.
24. Murray CJ, Vos T, Lozano R, Naghavi M, Flaxman AD, et al. (2012) Disability-adjusted life years (DALYs) for 291 diseases and injuries in 21 regions, 1990–2010: a systematic analysis for the Global Burden of Disease Study 2010. The lancet 380: 2197-2223.
25. Marcenes W, Kassebaum NJ, Bernabe E, Flaxman A, Naghavi M, et al. (2013) Global burden of oral conditions in 1990-2010: a systematic analysis. Journal of dental research 92: 592-597.
26. Kassebaum NJ, Bernabe E, Dahiya M, Bhandari B, Murray CJL, et al. (2014) Global burden of severe periodontitis in 1990-2010: a systematic review and meta-regression. Journal of dental research 93: 1045-1053.
27. Tonetti MS, Bottenberg P, Conrads G, Eickholz P, Heasman P, et al. (2017) Dental caries and periodontal diseases in the ageing population: Call to action to protect and enhance oral health and well-being as an essential component of healthy ageing–Consensus report of group 4 of the joint EFP/ORCA workshop on the boundaries between caries and periodontal diseases. Journal of clinical periodontology 44: S135-S144.
28. Müller F, Shimazaki Y, Kahabuka F, Schimmel M (2017) Oral health for an ageing population: the importance of a natural dentition in older adults. International dental journal 67: 7-13.
29. Syrjälä AMH, Ylöstalo P, Ruoppi P, Komulainen K, Hartikainen S, et al. (2012) Dementia and oral health among subjects aged 75 years or older. Gerodontology 29: 36-42.
30. Gil-Montoya JA, de Mello ALF, Barrios R, Gonzalez-Moles MA, Bravo M (2015) Oral health in the elderly patient and its impact on general well-being: a nonsystematic review. Clinical interventions in aging 10: 461.
31. Kaufman LB, Henshaw MM, Brown BP, Calabrese JM (2016) Oral health and interprofessional collaborative practice: examples of the team approach to geriatric care. Dental Clinics 60: 879-890.
32. Ramsay SE, Papachristou E, Watt RG, Tsakos G, Lennon LT, et al. (2018) Influence of poor oral health on physical frailty: a population-based cohort study of older British men. Journal of the American Geriatrics Society 66: 473-479.
33. El-Solh AA (2011) Association between pneumonia and oral care in nursing home residents. Lung 189: 173.
34. Haber J, Hartnett E, Allen K, Hallas D, Dorsen C, et al. (2015) Putting the mouth back in the head: HEENT to HEENOT. American journal of public health 105: 437-441.
35. Holland WW, Stewart S, Masseria C (2006) Screening in Europe. World Health Organization.
36. Agency for Healthcare Research and Quality, US Preventive Services Task Force, 2014. The Guide to Clinical Preventive Services 2014. Recommendation of the US Preventive Services Task Force 2014. Tobacco Use in Adults, Counseling and Interventions.
37. Canadian Task Force on the Periodic Health Examination. The Canadian guide to clinical preventive health care. http://www.phac-aspc.gc.ca/publicat/clinic-clinique/index-eng.php.
38. Harris M, Bennett J, Del Mar CB, Fasher M, Foreman L, et al. (2009) Guidelines for preventive activities in general practice. The Royal Australian College of General Practitioners.
39. Saadi H, Nagelkerke N, Al-Kaabi J, Afandi B, Al-Maskari F, et al. (2010) Screening strategy for type 2 diabetes in the United Arab Emirates. Asia Pacific Journal of Public Health 22: 54S-59S.
40. Spurlock DR (2018) The single-group, pre-and posttest design in nursing education research: it's time to move on. Journal of Nursing Education 57: 69-71.
41. LJ Jin, IB Lamster,JS Greenspan,NB Pitts, C Scully,S Warnakulasuriya (2016). Global burden of oral diseases: emerging concepts, management and interplay with systemic health. Oral Diseases (2016) 22, 609–619. doi:10.1111/odi.12428