

The Dental App or "The Oral Dental Healthcare App"

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Abstract: *This project aims to build the application in flutter. In "The Dental app" we build using the flutter framework, aims to provide users with a user friendly and accessible platform to manage their dental health effectively. It offers a range of features, educational resources on oral health, and a direct connection to dental professionals for consultation. This dental care mobile application developed with Flutter aims to improve oral health management, educate users on dental care, and enhance the accessibility of dental services. Its user-friendly interface and cross platform compatibility contribute to a comprehensive and efficient solution for individuals seeking to maintain their dental well-being.*

Keywords: Apps, Smartphone, Dentistry, Education, Clinical Practice, Contrast enhancement, dentistry

I. INTRODUCTION

The "Oral Dental Healthcare App" helps us to solve some of the most common problems dentist face getting the patients can download the app on their both phone and computer device and stay connected to their dentist. We use the technology in our app to scan your teeth and see your new smile in minutes and learn how long your transformation could take. In this app we implement the camera that we click the disease picture and send it on app to the dentist. That dentist can suggest the best dentist surgeon and medicines on their tooth disease.

Dental App incorporates maps, notifications, Firebase and download functionality. It enables easy clinic location, real-time appointment updates, secure data access, streamlined data flow, and additional features integration. Dental Healthcare experts at Flutter agency will aid you in collecting the requirements and understanding your needs for software development. With 10 years of experience, our engineers have the technical expertise and skills to make a robust and reliable dental practice management system

Untreated oral conditions, including dental caries, severe periodontitis, and edentulism, affect about 3.5 billion people worldwide. Oral health is integral to overall health; oral disease contributes to unnecessary pain and suffering and is the fourth most costly disease to treat in most industrialized countries. Routine oral hygiene, including daily brushing and flossing, is important for preventing oral disease and maintaining good oral health. Routine dental visits are also important for maintaining good oral health because dentists can check for early signs of oral disease, provide teeth cleaning, and offer counseling about oral health behaviors. Thus, promoting better oral health care is an important public health goal.

Major part of the dental imaging technology in use in clinical practice is based on the X-ray radiation. Panoramic radiographs and computed tomography scans reveal the anatomical and pathological structures of the teeth and alveolar bone, but they not only expose the patient to ionizing radiation and, in some cases, to non-risk-free contrast agents, but also require specialized personnel to safely operate the devices. Due to the associated risks, the barrier for imaging is higher. However, treatment planning and patient education can benefit from images, and an increasing number of dental professionals have been including digital photography as a part of patient visits.

II. BACKGROUND AND RELATED WORK

Along with the growth in mobile phone usage, there has been rapid growth in consumer-facing health promotion apps. About 29% of those who have downloaded an app to a mobile phone or tablet report downloading a health-related app, and in 2017, there were 325,000 health-related apps available for download. Mobile phone apps have been used to

promote a variety of healthy behaviors including tobacco cessation, diabetes self-management, diet and nutrition, and physical activity.

The use of mobile phone applications (Apps) has the potential to revolutionize the conventional practice of dentistry. There is a remarkable proliferation of mobile health apps in the field of dentistry which necessitates an urgent and reliable evaluation of the quality of these apps. The main objective of the article is to analyze the quality of dental apps using a reliable tool.

Dental caries is the most common multifactorial oral disease; it affects 60% to 90% of the global population. Dental caries is highly preventable through prevention behaviors aimed at improving oral hygiene, adequate fluoride usage, and dietary intake. Mobile apps have the potential to support patients with dental caries; however, little is known about the availability, target audience, quality, and features of these apps

III. DISCUSSION AND RESULTS

Smartphones and applications have contributed to the technological advancement in health care in recent years, influencing methods of research, access to information and communication between professionals and patients. The data obtained in the review suggested that researchers were interested, mainly, in understanding the potential of using, developing and evaluating these new tools available for dentistry, especially those designed for the clinical activity. The interest is relevant, since applications for Dentistry can facilitate the tasks related to information processing and communication, such as: registration of patient information, research in specific literature, discussion with colleagues and auxiliary professionals and communication with patients.

IV. USER INTERFACE

Dental Calendar is a new mobile app specifically designed for dentists and patients. Patients can install it on their smartphones or mobile devices when making appointments with dentists at clinics. One week before every scheduled appointment, Dental Calendar would automatically remind patients and confirm whether they would be able to visit the dental clinic or not.

Patients can take photos of their oral cavity using smart phones (selfie), and through cloud services send them to dentists and confirm whether they would arrive at the clinic on time. If patients are unable to attend their scheduled appointments, dentists can arrange another appointment through cloud services, thus saving time. If patients still cannot come at the new time, then dentists can contact them directly over the phone. A flowchart of the system is shown in ui.

Taking a picture requires 2 steps:

Ensure that the camera is initialized.

Use the controller to take a picture and ensure that it returns a Future<XFile>. Provides tools to work with the cameras on the device.

V. DATA DICTIONARY

The Table below shows the data dictionary of Dental Application. It has three entities namely Patient, Staff and Dentist. Entities are data that represent objects in the real world.

Patient:

The entity Patient is the one who will receive the dental procedure.

Staff:

The entity Dental Staff will manage the patient's information.

Dentist:

The entity Dentist is the one who operates the procedure.

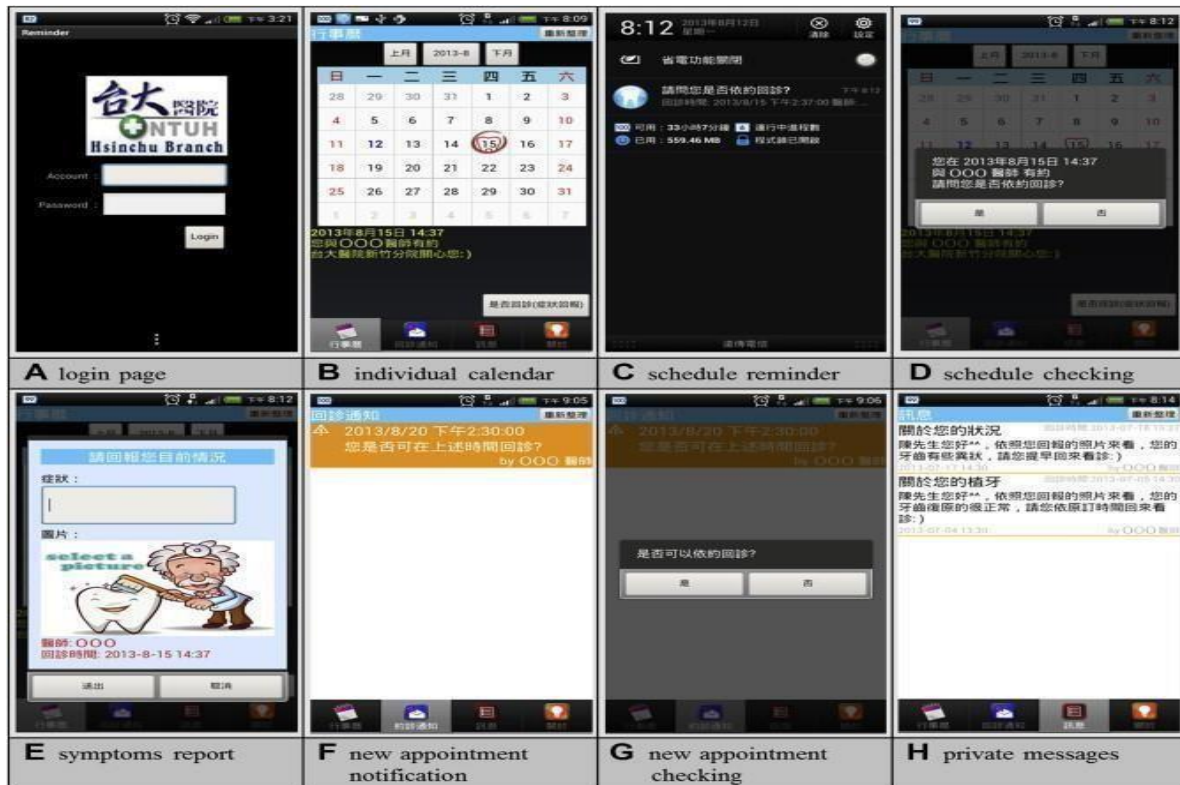
Description of Attributes			
Entity name	Attribute Name	Description	Constraints
user	Id	server as primary key	Int(11) auto_increment primery key
	full name	patient's Name	varchar(255)
	address	patient's Address	longtext
	gender	patient's gender	varchar(255)
	email	patient's gmail address	varchar(255)
	password	patient's password	varchar(255)
	contact number	patient's contact number	Bigint(11)
	reg date	patient's registration date	timestmap
	updation date	updated date	varchar(255)

Once the users click Appointment tab, the users will automatically access to the authentication page where the users need to login. The system will authenticate the username and password and send them to their respective page. If the user is a registered patient, he/she will access to the page that he/she can choose whether to make a reservation or check the appointment schedule. If the user is admin or dentist, he/she will access to the page that he/she to manage the database online.

Description of Attributes			
Entity name	Attribute Name	Description	Constraints
staff	Id	server as primary key	Int(11) auto_increment primery key
	username	staff's username	varchar(255)
	full name	staff's first Name	varchar(255)
	address	staff's address	longtext
	gender	staff's gender	varchar(255)
	contact number	staff's contact number	bigint(11)
	email	staff's gmail address	varchar(255)
	password	staff's password	varchar(255)
	reg date	staff's registration date	timestmap
	updation date	updated date	varchar(255)

Patients can install this new app, Dental Calendar, on their smart phones easily. Dental Calendar has the following five functions:

- Individual calendar. After dental treatment, a patient makes the next appointment with the dentist at the clinic. The scheduled days on the patient's calendars would be circled by a red tooth.
- Schedule reminder. One week before every scheduled appointment, Dental Calendar would remind patients automatically and confirm whether they can come to the dental clinics or not.
- Symptom report. In addition to conveying patients' answers regarding visiting the dental clinics, the app would request patients to take dental pictures and write messages about their oral conditions. All this information would be sent to dentists through cloud services.
- New appointment notification. If patients have difficulty in attending the original appointments, dentists can make new appointments and Dental Calendar would notify patients automatically.
- Private messages. After examining the reported symptoms, dentists can give some instructions regarding oral hygiene care or arrange earlier appointments for patients, and patients can read these messages from the designated column (H).



Five main functions of Dental Calendar: individual calendar, schedule reminder, symptom report, new appointment notification, and private messages, shown on patients' mobile devices, are demonstrated.

- Patients can use personal identifications and passwords to start the app.
- Scheduled appointments on personal calendars are circled by a red tooth.
- Dental Calendar reminds patients automatically and (D) confirms whether they can come to dental clinics or not.
- Patients can take pictures using their mobile devices and write messages about their oral conditions and send these to dentists.
- If patients would like to change original appointments, dentists can make new appointments on their computer web browsers and (G) Dental Calendar notifies patients automatically.
- (H) After examining the pictures along with symptom descriptions, dentists can provide instructions on oral hygiene care or make earlier appointments for patients if required

VI. FUTURE SCOPE

The aim of this overview is to study the currently available mobile apps in dentistry to curb the disadvantages and to develop an app which fulfils the cons in the currently available app. This overview gives a clear idea on where the app developer needs to pay more attention. Tele-medicine played a vital role in saving lives during the pandemic condition and also the future relies on

technology. Even though there is availability of n number of apps in the market but there is no single app which performs all the requirement. So this overview enlightens the pros and cons and paves way for the development of app which can perform every function

It is expected that this dental app will continue to evolve and expand its capabilities, making it an even more powerful tool for building modern, high-performance applications with flutter development. Also.. The dental app has a promising future with its ability to create

high performance, cross-platform applications from a single codebase, attracting a growing community of developers and companies, leading to increased adoption and demand for Flutter expertise in the industry.

VII. CONCLUSION

Dental Healthcare experts at Flutter agency will aid you in collecting the requirements and understanding your needs for software development. With 10 years of experience, our engineers have the technical expertise and skills to make a robust and reliable dental practice management system.

Dental applications research presented as main focus clinical practice, teaching and learning and patient orientation. The overview of the dental applications available in Portuguese for smartphones showed that the great majority was developed for clinical practice, with a lack of applications aimed at patient orientation and teaching and learning. Future Dental APP should provide evidence based, validated, updated data.

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