AN OVERVIEW ON MOBILE APPLICATION IN DENTISTRY

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Abstract

Applications for smart phones that are relevant to dentistry are gaining popularity and are an easier way for students, professionals, and patients to acquire information. The purpose of this article is to examine how mobile technologies and current dental "apps" are used. The transition from desktop learning (D-learning) to mobile learning (M-learning) has been a significant one throughout time, and it has only been made feasible with the use of electronic media and the expansion of the Internet. Despite the rise of mobile applications, there is still a need for all content to have a solid supporting body of evidence. Today, there are many excellent examples of dental applications that make the most of this electronic medium.

Index Terms: Mobile application, Dentistry, Tele-dentistry, and Technology

INTRODUCTION

A mobile application (or mobile app) is a software application designed to run on smart phones, tablet computers and other mobile devices. [1] The creation and study into mobile health and interventions to target a wide range of behavior change strategies for chronic illness management have been inspired by the rise in mobile phone ownership globally and their connection with the internet[1]. Healthcare workers are now using innovative methods of service delivery and instruction thanks to the creation of mobile applications expressly for the medical and dentistry fields. Having the right information and understanding about oral health is crucial for forming good oral hygiene habits. Using mobile devices has changed many facets of conventional clinical practice for health care professionals (HCPs)[3]. The importance of mobile devices in healthcare settings has sped up the creation of medical software applications (apps) on these platforms.

The maintenance of health records, communication and consulting support, information collecting for patient care and monitoring, clinical decision-making, and medical education and training are just a few of the crucial duties that a number of apps may help HCPs with. For HCPs, mobile devices and applications offer a number of benefits, the most notable of which is probably increased access to tools used at the point of patient care, which has been demonstrated to enable better clinical decision-making and better patient outcomes [3]. The purpose of this article is to review the current apps.

HISTORY AND BACKGROUND

History of the Mobile Phone [4]

1983-The first portable mobile phone was the Motorola DynaTAC 8000X, introduced in 1983.

1985- Sir Ernest Harrison, who was the chairman of Vodafone at the time, placed the first mobile phone call into the United Kingdom in 1985.

1989- It included a fold-down keyboard cover and was compatible with the Motorola 9800X or Microtrac, just as the DynaTAC. Many cell phones at the beginning of the history of the mobile phone were referred to as "car phones" because they were bulky to look at and challenging to carry in a pocket or purse. Although it was enormous compared to modern mobile phones, it was regarded as the first true mobile phone because it was portable and tiny enough. Later models from DynaTac were compact, however they had problems. Although the Motorola 2900 and Nokia Mobira Talkman were bulkier, their longer conversation times and better battery lives increased their popularity with users.

1994 – The first smart phone was IBM's Simon, which was released before the iPhone and Android. It contains 10 built-in program including Calculator, Address Book, Mail, Notepad, and Sketchpad.

1997- The earliest FDA approved medical app

2002 – With the Blackberry 5810, RIM advanced smart phones. This phone opened the road for innovation as the first phone with wireless email and the first device to integrate push notifications, in addition to having other unique features and built-in apps including Ring Tone Editor and To-Do Lists.

2007 – Maps, Weather, and Photo Gallery were the first preloaded apps on an Apple iPhone release, making life simpler. Soon after this release, Apple made another ground-breaking decision by making SDK available to businesses that build apps. This was the first time in history that third-party apps were permitted on mobile devices.

2008 – Apple launched the first mobile app store, which included 500 apps from various industries. "Developers can contact every single iPhone user through (one) shop itself," was the idea behind this release. Over 10 million apps were downloaded from the app store in the first three days of its launch, and 75% of those apps were free. After a few months, Android Market opened its doors with 50 apps.

2010- The number medical apps clearing FDA approval increased

2012 – By consolidating all of its material into the Google Play Store for apps, Google made a major advancement. As a result, the Android Market, Google Music, Google Books, and its video offering were renamed and combined into a single store.

2013- The number of medical apps doubled.

2014 – Many other sorts of mobile gadgets, including watches, tablets, and even televisions, now include app integration. The vast majority of these apps are meant for fun.

2017 was an all-time record for app downloads and users with 268 million downloads for the year and over $30 billion in revenue. Now that most large firms have begun to see the importance of apps, they are developing unique mobile marketing strategies. M-Commerce began to grow swiftly.

2018 – One amazing development that users of mobile devices are raving about is app cards. Cards housed on the home screen of a mobile device itself will allow users to access the most crucial information from apps in an easy to read and scroll through style. For the apps that use the strategy, it boosts engagement by 38%.

Developers who can easily generate material for cross-channel campaigns also benefit greatly from this.

2019 – Instant apps are a recent development. Users may access the features of the app from their preferred brand without having to install it, which made using the app simple.

CATEGORISATION OF CURRENTLY AVAILABLE APPS

As per data collected, there are currently 95 apps are available which is categorized into following,

Table 1

S.no	Categorisation	Sub-categorisation
A.	Clinical app	Appointment booking, Clinic management, Patient record maintenance, clinical Photography shade matching
B.	Diagnostic app	Consultation, Treatment planning
C.	Shopping app	Dental materials purchase, Medication purchase
D.	Educational app	Patient education, Dental students study materials
E.	Job vacancy app	Notification, online application processing
F.	Insurance app	Online consultation, Data storage, Reminder

Table 2

S. No	Name Of The Dental App	Category	Place Of Use	Developer	Available On	Language Available
1	My dental clinic	Clinical app	Clinics	Quantum x ,Inc	Google Play Store	English, Spanish Arabic, Portuguese
2	Dental monitoring	Clinical app	Clinics	Dental monitoring	Google Play Store	English
3	Dental drug and anesthesia	Educational app	Educational institution, clinics	Universal hospital LP	Google Play Store	English
4	Denticalc :the dental app	Clinical app	Clinic	Denticalc	Google Play Store	English
5	Dental study	Educational app	NEETPreparation centre,College ,Clinics	Laisa Muraguti Bezerra	Google Play Store	English
6	Dentist dental management CRM	Clinical app	Clinics, educational instituitions ,patients	Coola	Google Play Store	English
7	Dentalkart	Shopping app	educational institutions clinics, dentalprofessionals	VASA Denticity Pvt.Ltd	Google Play Store	English
8	Bonebox- dental lite	Educational app	Educational institutions ,clinics	iSO-FORM ,LLC	Google Play Store	English
19	My dental care	Educational app	Clinics ,educational instituition.	My Dental Care Oral Health Education LTD	Google Play Store	English
10	Dental anatomy	Educational app	Dental students And professionals educational institutions.	Visual 3D Science	Google Play Store	English
11	Dental exam	Educational app	Educational institutions, coaching centres , Dental professionals	Dr.OKBA	Google Play Store	English
12	Dental hub	Educational app	Educational instituitions	The dental hub	Google Play Store	English
13	Learn dentistry	Educational app	Educational instituitions	Super Simple video	Google Play Store	English
14	MB2 dental	Educational app	Dental professionals, NEET Preparation centre	Pacesetter Technology ,LLC	Google Play Store	English

15	Cusp Dental clinic and software	Clinical app	Clinics	Cherry software	Google Play Store	English
16	Open dental	Clinical app	Clinics	Open dental software ,Inc	Google Play Store	English
17	Dental pocket	Educational app	Educational instituition, NEET Preparation centres.	Dental pockets	Google Play Store	English
18	Dental chat	Clinical app	Clinics	Live dental chat /Dental chat app/Dentalchat.com	Google Play Store	English
19	Dentee- for doctors	Clinical app Shopping app	Clinics, Dental professional	ecgPlus Technologies Private Limited	Google Play Store	English
20	Dental designer Pro	Clinical app	Clinics-to take photos	Ahmed Naguib	Google Play Store	English
21	Dental shooting	photography app	clinics	Dental shooting SRLS	Google Play Store	English
22	Dental companion	Clinical app	clinics	DentalSoft.fr	Google Play Store.	French
23	Dental Pro - doctor app	Clinical app	Clinics	Bit68	Google Play Store	English
24	Indian dental network	Educational app, jobvacancy app,	Dental professionals	Healthpole Apps	Google Play Store	English
25	Just dental	Clinical app	clinics	Just dental	Google Play Store	English
26	Dentistry today app	Educational app	Dental professionals	Dentistry Today Inc	Google Play Store	English
27	Dental clinic app	Clinical app	clinic	Mustafa Fadhil	Google Play Sore	English
28	AP dental jobs	Job vacancy app	dental professionals	Dr.K.T.S.S. Rajajee	Google Play Store	English
29	Dental scan	Clinical app	clinics	DentalSoft.fr	Google Play Store	English
30	Dental Empire - mastering the dentistry	Educational app	Educational institutions, coaching centre.	Education Alicia Media	Google Play Store	English
31	Dental Dictionary by Farlax	Educational app	educational institutions, dental professionals	The free dictionary.com-Farlex	Google Play Store	English
32	Dental prescriber	Clinical app	clinics	Dental Australia sciences PtyLtd	Google Play Store	English
33	Dentistry quiz	Educational app	dental students, Dental professionals	Sana Edutech	Google Play Store	English
34	TBS dental	Educational app, shopping app	Educational institutions, clinics	Ventla	Google Play Store	English

Xi'an ShiyouDaxueXuebao (ZiranKexue Ban)/
Journal of Xi'an Shiyou University, Natural Sciences Edition
ISSN:1673-064X
E-Publication:Online Open Access
Vol: 66 Issue 01 | 2023
DOI 10.17605/OSF.IO/7E6DB

35	Lignox dental app	Educational app	Educational Institution ,Dental professionals	Mediworld Publications Pvt Ltd	Google Play Store	English
36	Dental mirror	Phpotography app	clinics	Widget7	Google Play Store	English
37	Dental software app dentaltap	Clinical app	clinics	Artur Shvaiberov	Google Play Store	English
38	Dental anaesthesia - the second look	Educational app	Educational instituitions, Dental students and professionals	The University of Michigan	Google Play Store	English
39	Dentalcare	Clinical app	clinics	PNB Metlife	Google Play Store	English
40	Dental pulse academy	Educational app	NEET Preparation centre, educational instituition	Testpress	Google play Store	English
41	Dental anatomy mastery	Educational app	NEET Preparation centre, educational instituition	HigherLearning TechnologiesInc	Google Play Store	English
42	Makkha dental	Educational app	Dental professionals	INDEX Conferences and Exhibitions Org.Est	Google Play Store	English
43	ZR Dental	Educational app	Clinics, educational instituition	HVMHL Vistas team	Google Play Store	English
44	Dental index	Clinical app	Pet-clinics	Colgate Palmolive Company	Google Play Store	English
45	Tooth SOS	Educational app	Clinics, educational instituitions	IADT	Google Play Store	English
46	Dental assistant	Educational app	Dental professional, educational instituition	Eniseistudio	Google Play Store	English
47	Dental assistant flashcards	Educational app	Coaching centres	NUPUIT	Google Play Store	English,
48	Dental quizzer	Educational app	Coaching centres	AppMagico	Google Play Store	English
49	Dental instruments	Educational app	Educational instituition	Bolukas app	Google Play Store	English
50	Dent Acme MDS next dental	Educational app	Coaching centre	Education Genes Media	Google Play Store	English
51	ASA Dental	Educational app	Clinics, educational instituition	Grafica77	Google Play Store	English
52	KDM Dental placement	Job vacancy app	clinics	RBI Development	Google Play Store	English
53	Dental anatomy pro	Educational app	educational instituitions	Visual 3D Science	Google Play Store	English

54	Dental connect	Shopping	dental professionals, dental students, clinics	3M	Google Play Store	English
55	Dental scan	Diagnosing app	Used commonly by the patients	Damien Soulard	Google Play Store	English
56	Dental Experts	Job vacancy app	clinics	On Demand Work	Google Play Store	English
57	Smile dental clinic	Clinical app	clinics	ZakInc	Google Play Store	English
58	Darby dental	Shopping app	clinics	Darby dental supply	Google Play Store	English
59	Pulp NEET MDS next Prepapp	Educational app	NEET preparation centres	MCQdb	Google Play Store	English
60	Dental hygiene mastery	Educational app	NBDHE coaching centre	Higher Learning Technologies Inc	Google Play Store	English
61	Dental education	Educational app	Educational instituition	Educational Hub	Google Play Store	English
62	Dental Record	Clinical app	Clinics	AppDevCoders	Google Play Store	English, Spanish, Portuguese
63	Pinkblue	Shopping app	Dental professionals and Students	Pinkblue Supply Solutions Pvt .Ltd	Google Play Store	English
64	REVA DENTAL CLINIC	Clinical app	Clinics	Bestone industries	Google Play Store	English
65	Keroxdental	Shopping app	Dental professionals	JBdev	Google Play Store	English(3 language
66	1dental	Clinical app	Clinics	1Dental	Google Play Store	English
67	Dentistry-fundamental of dental practice in 3000 QZ	Educational app	Medical professional ,educational instituition	Top of Learning	Google Play Store	English
68	Dentist manager	Clinical app	clinics	Spatialia	Google Play Store	English
69	Dental times	Educational app	dental professionals and dental students	Dentainment, LLC	Google Play Store	English
70	Dentulu patients-Virtual dental consulter	Diagnosing app	clinics	Dentulu Incorporate	Google Play Store	English
71	DENTAL SCHOOL	Educational app	educational instituitions, coaching centres	HARSH JEET EXPO	Google Play Store	English

72	INCUS – NEET PG ,NEET MDS Pre app	Educational app	medical and dental students,NEET preparation centres	Incus Quiz private Limited	Google Play Store	English
73	NEET MDS-offline Dental PG app	Educational app	NEET preparation centre, dental students	GKBook Learning Solutions Pvt LTD	Google Play Store	English
74	Dentistry Pro consultant	Educational app	Educational instituitions	Augusta University	Google Play Store	English
75	Ortho pic : HD Dental images	Photography app	Clinics	Lean Dental Operations	Google Play Store	English
76	Quick dental guide	Educational app	Educational instituitions	Dr.SKY	Google Play Store	English
77	Dental coach-white smile	Educational app	Used by the patients	Doctor Dip	Google Play Store	English
78	Quicdent-temp dental jobs	Job vacancy app	Clinics	Quicdent	Google Play Store	English
79	Pearlii-home dental check up	Diagnosing app	Used by the patients	Pearlii Pty Ltd	Google Play Store	English
80	Beam benefit	Insurance app	Clinics, home	Beam technologies Inc	Google Play Store	English
81	Practo	diagnosing app	clinics	Doctor appointment, consultation, meds,tes & more	Google play store	English
82	Brush Dj	Educational app	used by the patients	Ben Underwood	Google play store	English
83	Brush monster	Educational app	used by the patients	Kitten planet	Google play store	English
84	Brush 'n' Save	Educational app	used by the patients	Amano dental clinic	Google play store	English
85	Dent mark	Shopping app	clinics, educational instituitions	Dentmark	Google play store	english

DISCUSSION

The review of these applications was made from the play store which is widely used. The electronically search was done and the total number of application available related to dentistry was reviewed based on the above tabulated criteria's in the table 1.1

MERITS

1. Mobile apps available in multiple languages makes it user friendly.

2. Mobile apps makes patient easily approach and consult dental physician from home.

3. Mobile app program features provides tools for tracking or reminding dental appointments.

4. Dental app provides option for easy sharing of radiographs and reports between co-practitioners and patients.

5. The app encouraged different components of the user's everyday dental hygiene and patient education regarding the appropriate brushing technique, which was the most frequently reported theme.

6. Mobile app provides easy accessibility for the dental physician and dental students to acquire knowledge on the recent advancements and to update the treatment protocols followed worldwide.

7. Mobile app provides platform for the dental physician to discuss on peculiar case to arrive proper diagnosis.

8. Mobile apps are can be accessed from anywhere and it doesn't requires huge machinery.

DEMERITS

1. Scheduling dental appointments at home causes delays and may worsen conditions.

2. Users of apps worry about unauthorized parties accessing their personal information

3. Lack of confidentiality as it is maintained by receptionist.

4. Problems with persistent calls and messages from the app's supplier.

5. If patients forget their ID number, they may become confused between patients with the same name.

6. If a dentist receives an emergency case, they are unable to reschedule a patient's appointment.

7. Payment error may occur.

8. Cannot be used when server error and lack of internet facility.

9. Requires usage of multiple apps and different apps by various Dentist.

RECOMMENDATIONS

Utilizing the various apps that are currently available, one app may contain the following elements. The addition of a diet chart to the app that the dentist may update or modify will help the patient recover quickly. The apps can be updated with videos made by dentists to raise awareness of routine oral health, which will inform the patient and reduce their anxiety. These apps can also have videos of straightforward treatment procedures. The software can also offer online payment alternatives, allowing patients to pay the dentist online for appointments made during a pandemic. The apps can give patients

personalized QR codes based on their ID numbers, which eliminates the need for the receptionist to remember the ID number and allows them to quickly access the patient's information. This prevents confusion between patients with similar names. These apps can also work with diagnostic facilities to facilitate communication between dentists, patients, and laboratories for the purpose of discussing cases. They can also quickly deliver reports to patients and dentists via the app without any additional delay.

FUTURE OF MOBILE APPLICATION

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 enlights the pros and cons and paves way for the development of app which can perform every function

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