Review Article

Orthodontic apps: A stairway to the future

ABSTRACT

The increasing usage of smartphones is rapidly changing our lives both personally and professionally. In healthcare and dentistry, various apps are accessible on the smartphone to educate patients about orthodontics and help them through their treatment. Also, various apps are available for the orthodontist to manage patients and to update oneself on the current modalities of treatment. The aim of this article was to review the various apps available on the iOS Apple Store and Google Play Store for patients and orthodontists. Two smartphones were used to search for apps using keywords such as orthodontics, orthodontist, braces specialists, and braces. A total of 354 apps relevant to orthodontics were found on both the iOS and Android platforms. These apps could be classified as patient education apps, patient management apps, diagnostic apps, and updating apps.

Keywords: Apps, orthodontics, smartphones

INTRODUCTION

The last few decades have seen a phenomenal rise in our utilization of new technology which has transformed both our personal and professional lives. One such area of technological advancement is the smartphone. Smartphones are now providing routine access to information in ways that were previously not possible, and this includes the area of medical education.[1] The latest generation of smartphones is increasingly viewed as handheld computers rather than as phones, due to their powerful on-board computing capability, capacious memories, large screens, and open operating systems (OSs) that encourage application development.[2]

A smartphone is a cellular telephone with an integrated computer that is capable of performing a broad array of tasks, including running various downloadable applications (apps) that typically are not associated with a cellular phone. Although smartphones existed as early as 1992, it was not until the development of the Palm and Blackberry in 2001 and 2002, respectively, that consumers began to use mobile devices capable of wireless information services and web browsing. Release of the iPhone in 2007 included features not found on previous devices and led the way for developers to create a library of apps available to consumers.[3]

A smartphone is defined by its manufacturer or OS, and the current leading systems run Blackberry, iPhone, and Android platforms.[4] An app is typically a small specialized program downloaded onto a mobile device. An app is accessed using a smartphone that connects, through an internet portal, to a library of apps. The users can browse the library and search for specific apps that serve their needs.[1] Owing to their portability, ability to update, speed, and simplicity, smartphone apps are an ideal tool for quick reference or when accessing a desktop computer would not be feasible.[5]

As a result, smartphones can serve as quick reference tools for train inquiry, flight inquiry, ticket booking, daily expense monitoring, checking bank balance, etc.[3]

Despite the widespread prevalence of smartphones and apps available for general utilities, even there are some apps

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specifically designed for medical and dental field.[6] Medical and dental apps have been one of the fastest growing categories of programs and include various programs designed specifically for orthodontics. For orthodontics, there is now a wealth of information available, much of which can be freely accessed by our patients.[3]

As of today, a total of 350 plus apps on orthodontics exist across both the iOS and Android platforms. The range of applications is as varied as practice management, peer-reviewed journals, diagnostic apps, orthodontic education, patient reminder apps, progress trackers, model analysis apps, public awareness information, fun with braces, etc.[7]

This article provides a systematic review on the apps that are available to the orthodontist on various software platforms and for different uses.

APP SEARCH

In our evaluation, two smartphones [Figure 1] were used to search various apps available in the two most popular OSs of smartphones, i.e., iOS and Android in their respective app stores (i.e., App Store in case of iOS-enabled phone and Google Play Store in case of Android-enabled phones). The smartphones used were iPhone 7 with iOS 10 and Asus Zenfone 3 with Android 7.0 (Android Nougat).[8] The apps were searched using keywords such as orthodontics, orthodontist, braces specialists, and braces. All the gathered information of each app was recorded, including the details of the price of the app and the other information about the developer were also included in the study. All the other general dentistry and medical health apps which do not include any information about the orthodontics were excluded from the study.

Utmost care was taken not to miss out on any app available; but, since apps on the App Store and Play Store are added frequently, there could be a possibility that a few apps were not included for this study.

RESULTS

The results of searches on the smartphones were analyzed in detail and clubbed under the headings of:
1. Apps for patient education
2. Apps for patient management
3. Diagnostic apps
4. Updating apps.

A total of 354 apps were found which were further classified under apps for iOS and Android in all four groups [Table 1].

A few apps of each of the above-mentioned categories on both iOS and Android platform are described in Table 2.
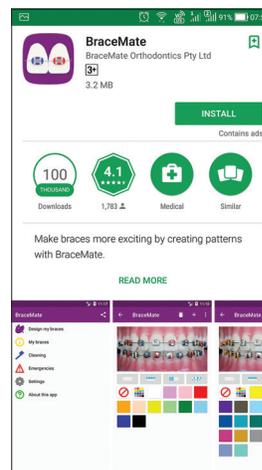
Figure 1: BraceMate app

Table 1: Classification of orthodontic apps

Serial number	Category	Number of apps on smartphone		Total number of apps
		iOS	Android	
1	Apps for patient education	26	18	44
2	Apps for patient management			202
a	Clinic apps/practice management apps	89	95	
b	Apps to remind patients about elastic wear	3	2	
c	Apps to remind patients about aligner wear	2	2	
d	Apps to deal with orthodontic emergencies	2	1	
e	Progress tracking apps	2	4	
3	Diagnostic apps	10	15	25
4	Updating apps			83
a	Apps for publications/journals/magazines	27	15	
b	Apps for orthodontic products	10	7	
c	Apps for orthodontic conferences	6	14	
d	Apps for orthodontic news	2	2	
Total apps				354

Table 2: Orthodontic Apps

Category	Apps	Operating system	Rating (1-5)	Cost	Description
Patient education	BraceMate	iOS	-	Free	App that allows patients to choose the color of their braces
	Braces on teeth	iOS	-	Free	Photoeditor app to choose their braces
	Braces Help	iOS	-	Free	Patient education app for patients to care for their braces
	Orthoconnex	iOS	-	Free	Patient education app to obtain consultations from orthodontists
	Invisible braces scan	iOS	-	Free	App for patients to check whether they are suitable for invisible braces
	Colour My Brace	iOS	-	Paid (Rs. 79)	App for patients to choose the color of their elastics
	Ortho Guide	iOS	-	Free	Informative app about the different types of braces available
	BraceMate	Android	4.1	Free	App that allows patients to choose the color of their braces
	Braces Photo Booth	Android	3.8	Free	Photoeditor app to choose their braces
	The Orthodontic Specialists	Android	-	Free	Informative app about orthodontic treatment
	Orthoconnex	Android	5	Free	Patient education app to obtain consultations from orthodontists
	Braces	Android	4.6	Free	Photoeditor app to choose their braces
	What's Color	Android	3.7	Free	App for patients to choose the color of their braces
	Braces Booth Pro	Android	-	Free	Photoeditor app to choose their braces
Patient management	My Orthodontist	iOS	-	Free	Appointment app
	Skin n' Smiles	iOS	-	Free	Appointment app
	Smile-tastic	iOS	-	Free	Elastic change reminder app
	Remindalign	iOS	-	Free	Aligner change reminder app
	Bracesetters Orthodontics	iOS	-	Free	Appointment, aligner change reminder and orthodontic emergency app
	Brace off	iOS	-	Paid (Rs. 159)	Progress tracking app
	OrthoPulse	iOS	-	Free	Patient compliance tracking app
	Dentist Software	Android	4	Free	App to register patient records
	I AM BRACED	Android	-	Free	App for orthodontic emergencies
	My Orthodontist	Android	3.3	Free	Appointment app
	Milestone Orthodontics	Android	-	Free	Appointment app
	BraceReminder	Android	4.3	Free	Appliance activation reminder app
	Smart Smile App	Android	4.7	Free	Aligner wear reminder app
	Ortho Track	Android	5	Free	Progress tracking app
Diagnostic apps	Ceph Ninja S	iOS	-	Free	Cephalometric analysis app
	Ortho Ruler	iOS	-	Paid (Rs. 2299)	Tooth Ratio calculating app
	Easy IOTN	iOS	-	Free	App to calculate the index of orthodontic treatment need
	Smar Tooth	iOS	-	Free	Tooth Ratio calculating app
	iModel Analysis 2	Android	4.3	Free	Model analysis app
	MBT chart helper	Android	4.2	Free	Bracket positioning app
	One Ceph	Android	4.7	Free	Cephalometric analysis app
	CVM Stage Guide	Android	4.5	Free	App to assess the cervical vertebrae maturity
Updating apps	AAO	iOS	-	Free	Informative app for members of American Association Orthodontists
	AJO-DO	iOS	-	Free	Orthodontic journal app
	Dental Press	iOS	-	Free	Orthodontic journal app
	Dentmark	iOS	-	Free	Orthodontic products app
	Libral Traders	iOS	-	Free	Orthodontic products app
	Orthotown	iOS	-	Free	App for orthodontic news and updates
	AJODO	Android	-	Free	Orthodontic journal app

Contd...

Table 2: Contd...

Category	Apps	Operating system	Rating (1-5)	Cost	Description
	Iosweb	Android	-	Free	Informative app for members of the Indian Orthodontic Society
	Orthodontic Update	Android	-	Free	App for orthodontic news and magazines
	Dental Instruments	Android	-	Free	Orthodontic products app
	Dentalkart	Android	-	Free	Orthodontic products app
	Orthotown	Android	-	Free	App for orthodontic news and updates

APPS FOR PATIENT EDUCATION

One of the most important categories of apps present on Smartphones is patient education apps. Many of the clinical practice apps also consist patient education; however, there are exclusive patient education apps such as the BraceMate App [Figure 1]. The BraceMate app is a free app which helps in picking the color of modules and/or different types of brackets. It also clues the patient in as to how to deal with orthodontic emergencies. One more helpful app in this category is the Braces Booth Pro [Figure 2]. This app helps the patients to choose from different braces options and also projects the image of the patient with the different types of braces.

APPS FOR PATIENT MANAGEMENT

Apps for patient management consist of five further categories, namely clinic or practice management apps, apps to remind patients about wearing elastics, apps to remind patients about aligner wear, apps to deal with orthodontic emergencies, and progress tracking apps.

Clinic or practice management apps is a major category in this group of patient management apps. The practice management apps consist of apps such as the orthodontist clinic app which mainly speaks about the practice/clinic, and it was like a mini website which consisted of information about the practice and clinic in brief.

Another major category in this group are the reminder apps, be it a reminder for keeping good oral hygiene while braces wear, reminder for elastic wearing like Smile-tastic during active orthodontic treatment, or a reminder of aligner wear like Remindalign, Smart Smile App [Figures 3 and 4]. Both of the apps offer a prescheduled reminder service that increases compliance resulting in better appliance wear and thereby enhancing the success of orthodontic treatment.

Another useful app in this category is the WAMBCO Orthodontic Treatment App.[3] In this app, the patient will need to enter some of information based on their treatment to estimate how long the process should take.
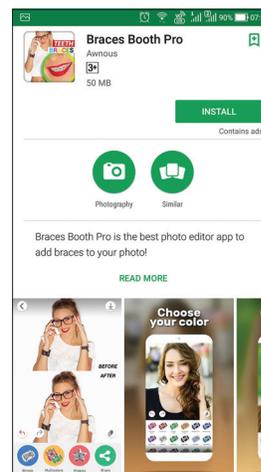
Figure 2: Braces booth pro

The patient will probably also need the assistance of their orthodontist to estimate how much of the treatment has been completed [Figures 5 and 6]. The Invisible Orthodontist app assists patients with their progress through their treatment plan for invisible braces. SorrisoOrtho is the first app created with the sole objective to enhance the orthodontic experience. The main feature of this app is the ability to customize the app for each orthodontic office.

DIAGNOSTIC APPS

Apps such as Virtual Orthodontist and iModel analysis 2 help in diagnosis and planning of the treatment of the patient as it gives realistic information to the patient about the various aspects of orthodontic treatment [Figures 7 and 8].

UPDATING APPS

This group consists of apps such as apps for publications/journals/magazines, apps for orthodontic products, apps for orthodontic conferences, and apps for orthodontic news.

It includes apps of the various orthodontic associations to enhance the membership and provide information about various activities such as online lectures and member directory to its existing members, for example, the American Association of Orthodontists (AAOs) app [Figure 9]. The AAO
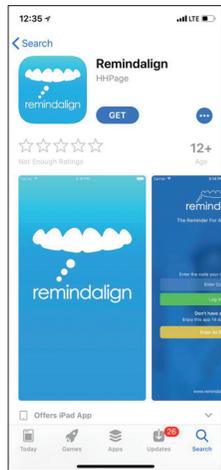
Figure 3: RemindAlign app
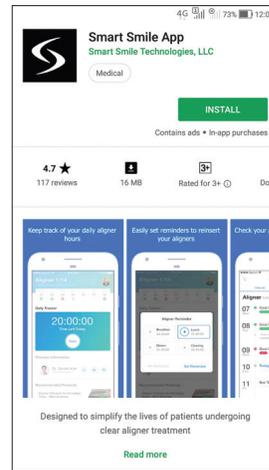
Figure 4: Smart smile app

Figure 5: WAMBCO app: Treatment progress
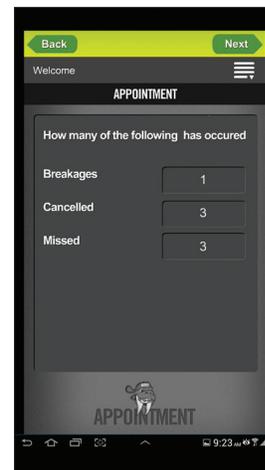
Figure 6: WAMBCO app: Appointment
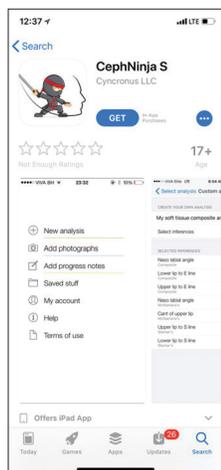
Figure 7: CephNinja S app
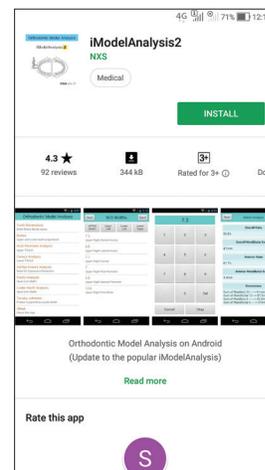
Figure 8: iModel analysis 2 app

Mobile App provides easy access to members of the AAO for high-demand AAO resources including registration and information for the AAO annual session, winter conference, practice management materials, forms and releases, patient

education materials, videos, marketing materials, continuing education, online lectures, at-a-glance continuing dental training codes, dental benefits advisory service hotline, AAO insurance, member directory, career management resources, office design manual, and AAO communities.

The other category of apps which could be helpful to clinicians was the journal apps which includes archives of issues as well as notifies about the latest issue, thereby keeping the orthodontist up-to-date with the latest on his/her smartphones on the go, for example, AJODO app [Figure 10]. The AJODO app brings with it the convenience of reading your favorite journal from anywhere in the world with just a tap. It is available for Android smartphones and tablets. With the AJODO app, it offers alerts when new issues are available. The app is informative, interactive, and offers high-quality multimedia viewing.

Another interesting category of apps in this group is the orthodontic products apps which include apps like Dentmark [Figure 11] which gives a detailed information

of the orthodontic apps listed in their app. Another type of app in this category is an app which could be an individual company app like the app of an orthodontic company itself like the Libral Traders [Figure 12] which is the easiest way to order orthodontic products online.

Another category of apps includes the orthodontic community apps, for example, Orthotown [Figure 13]. Orthotown is the leading online community for orthodontist worldwide. Through the Orthotown app, one can access the message boards where one can respond to and post new topics as well as check out the active topics and cases of the day.

CONCLUSION

Smartphones have become an integral part of our lives making it easier and convenient for the orthodontist and the patient to access relevant orthodontic information at their fingertips. The app search carried out using two smartphones yielded a total of 354 apps related to orthodontics across both
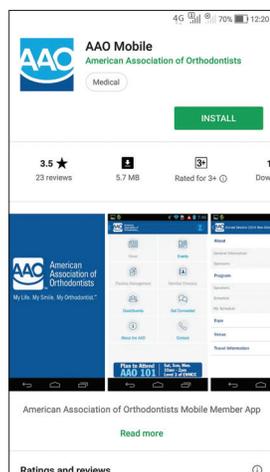
Figure 9: American association of orthodontics app
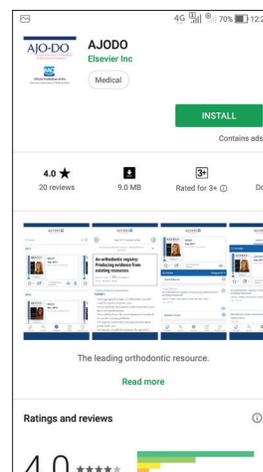
Figure 10: American journal of orthodontics and dentofacial orthopedics app
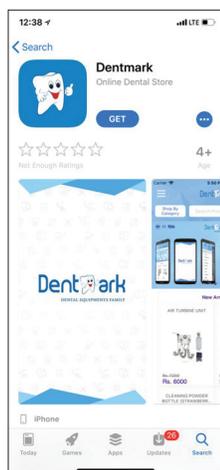
Figure 11: Dentmark app
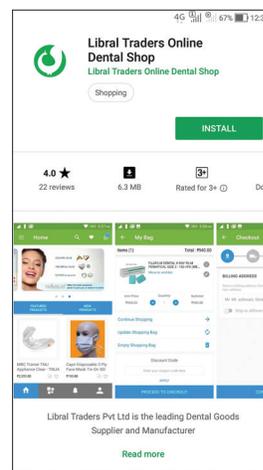
Figure 12: Libral Traders app
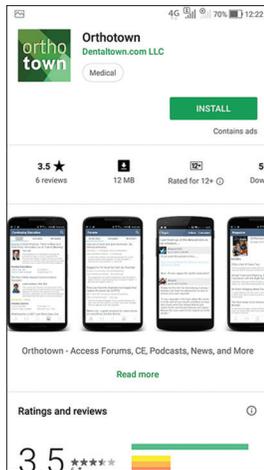
Figure 13: Orthotown app

iOS and Android platforms, out of which 44 apps were patient education apps, 202 apps were patient management apps, 25 apps were diagnostic apps, and 83 apps were updating apps.

Thus, apps on smartphones are indisposable inventories of the future and also the present. Their infusion in orthodontic care is a boon for both the orthodontist and the patient.

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Conflicts of interest

There are no conflicts of interest.

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