

The World of Orthodontic apps.

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Abstract

The usage of the portable electronic devices such as the smartphones and handheld tablets has increased over the years, and this is true in the health-care industry also. This is because of the development of various patient management softwares. The use of apps to manage, educate, and inform patient is not uncommon among orthodontists nowadays. The aim of this article was to review the various apps available on the Google Play Store and iOS Apple Store for orthodontists and patients. Four smartphones using orthodontically relevant keywords such as orthodontics, orthodontists, and braces were searched and reviewed in detail. Out of the 354 orthodontically relevant apps available in both Android and Apple operating systems, the apps could be categorized as orthodontist-related apps or patient-related apps. Under these categories they could be further classified as practice managements apps, patient education apps, model analysis apps, tooth material calculators, patient reminder apps, etc.

Key words: Orthodontic apps, orthodontics, smartphones, technology

INTRODUCTION

Usage of mobile apps has become increasingly prevalent across mobile phone users. A May 2012 comScore study reported that during the previous quarter, more mobile subscribers used apps than browsed the web on their devices: 51.1% vs. 49.8%, respectively. Researchers found that the usage of mobile apps strongly correlates with user context and depends on user's location and time of the day. Mobile apps are playing an ever-increasing role within healthcare and when designed and integrated correctly can yield many benefits. Market research firm Gartner predicted that 102 billion apps would be downloaded in 2017 (91% of them free), which would generate \$26 billion in the US, up 44.4% on 2012's US \$18 billion. By Q2 2015, the Google Play and

Apple stores alone generated \$5 billion. An analyst report estimates that the app economy creates revenues of more than €10 billion per year within the European Union while over 529,000 jobs have been created in 28 EU states due to the growth of the app market. The term "app" is a shortening of the term "application software." It has become very popular, and in 2010 was listed as "Word of the Year" by the American Dialect Society. In 2009, technology columnist David Pogue said that newer smartphones could be nicknamed "app phones" to distinguish them from earlier less-sophisticated smartphones. Mobile apps were originally offered for general productivity and information retrieval, including email, calendar, contacts, stock market, and weather information. However, public demand and the availability of developer tools drove rapid expansion into other categories, such as those handled by desktop application software packages. Many dental/orthodontic offices are starting to take advantage of the many mobile "apps" that make managing a dental practice easier. The ability to download custom-built software applications (apps)

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has created new opportunities for orthodontists to integrate technology into clinical practice and patients to collect the information about orthodontics and help them during their treatment. With the increasing use of smartphones and handheld technology, the use of apps in various arenas of orthodontic practice management seems invariable. As of today,^[1] 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. This article describes a preliminary update on the apps that are available to the orthodontist on various software platforms and for different uses.^[1,2]

APP SEARCH

In our evaluation, four smartphones [Figure 1] were used to search various apps available in the two most popular operating systems 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, iPhone 6 plus with iOS 10, Samsung s7 Edge with Android 7.0 (Android Nougat), LG v20 with Android 6.0.1 (Android Marshmallow).^[3] 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 included in the study. The apps which had a Lite version (Free) and Full version both were considered. 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 are on the App Store and Play Store 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 orthodontists [Figure 2]
2. Apps for patients/laypersons [Figure 3].

In the category of apps for orthodontists [Table 1], we found a total of 144 apps in iOS and 150 apps in Android platforms, out of the 354 apps in both platforms, apps were further classified under apps for orthodontists [Table 2] such as practice management, publications, orthodontic products, apps aiding in diagnosis, orthodontic conferences,

Table 1: Orthodontic apps on the android and iOS platforms for smartphones

Operating system	Category	Number
iOS	Clinicians app	
	Clinic apps/practice management	89
	Publications/journals/magazines	27
	Orthodontic products	10
	Apps aiding in diagnosis	8
	Orthodontic conferences	6
	Tooth ratio calculators	2
	Orthodontic news	2
	Patient apps	
	Orthodontic education	26
	Reminding patients about elastic wear	3
	Reminding patients about aligner wear	2
	Dealing with orthodontic emergencies	2
	Progress tracker	2
Total	179	
Android	Clinicians app	
	Clinic apps/practice management	95
	Publications/journals/magazines	15
	Orthodontic products	7
	Apps aiding in diagnosis	10
	Orthodontic conferences	14
	Tooth ratio calculators	5
	Orthodontic news	2
	Patient apps	
	Orthodontic education	18
	Reminding patients about elastic wear	2
	Reminding patients about aligner wear	2
	Dealing with orthodontic emergencies	1
	Progress tracker	4
Total	175	
Total in both operating system		354



Figure 1: Smartphones

and tooth ratio calculators. Under the category of patient apps [Table 3], it was found that these apps could also be

grouped as apps for orthodontic education, reminders for wearing elastics, reminders for wearing aligners, dealing with orthodontic emergencies, and progress tracker.^[3,4]

Apps for orthodontists

The apps for orthodontists predominantly consist of practice management apps such as the orthodontist clinic app which mainly speaks about the practice/clinic, and it was like a mini website which consisted of info about the practice and clinic in brief [Figure 4].

It also included 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 5]. The AAO 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 6]. 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 could be an



Figure 2: Apps for orthodontists

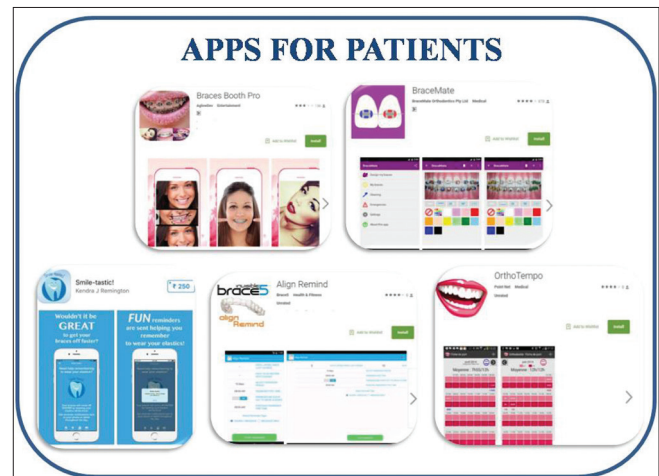


Figure 3: Apps for patients

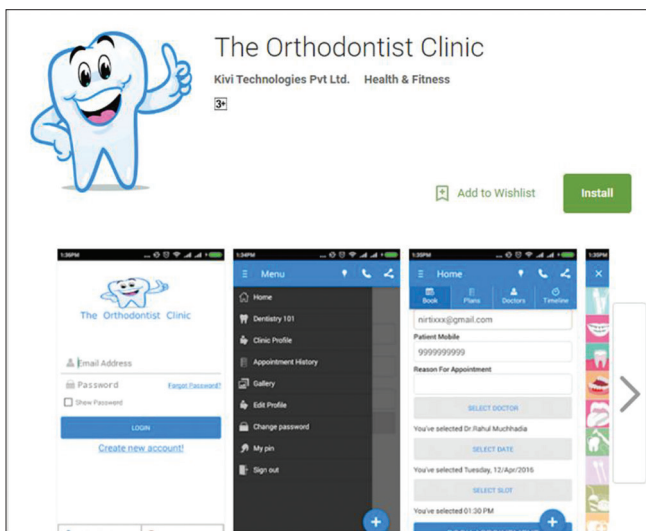


Figure 4: The orthodontist clinic

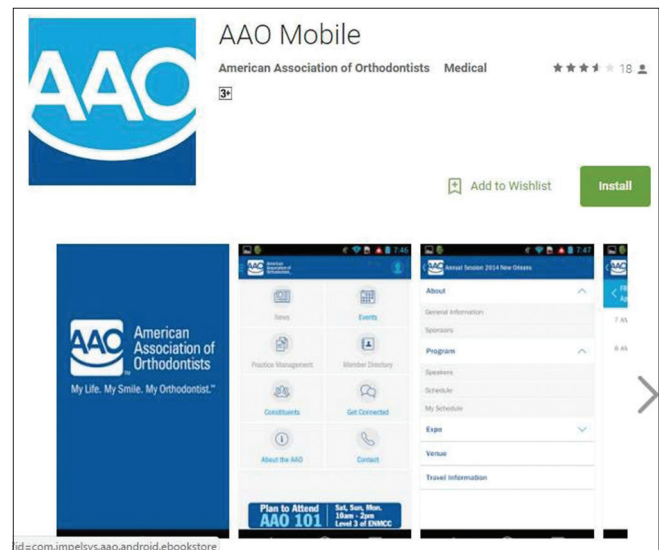


Figure 5: The American Association of Orthodontist mobile

individual company app like the app of an orthodontic company itself like the AO Roudcare, is the easiest way to order American orthodontics products online with DHL shipping service [Figure 7] or it could be app like orthodontic products [Figure 8] which actually gives a review of orthodontic products both old and new in detail and also offers good deals on orthodontic products listed on their app.

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 9 and 10].

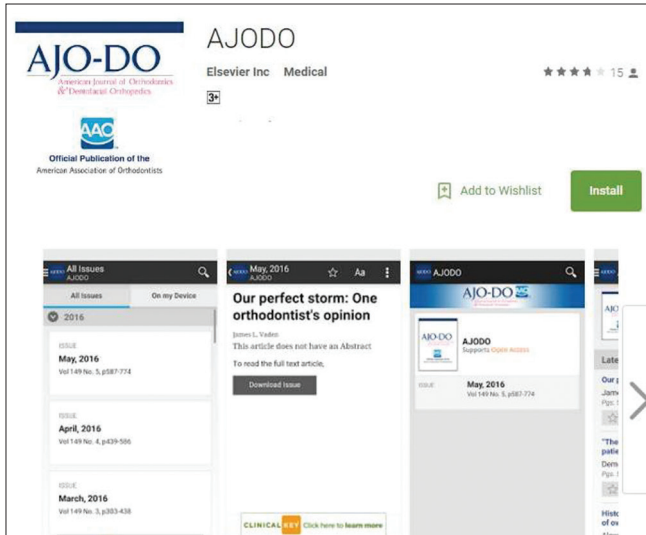


Figure 6: AJODO

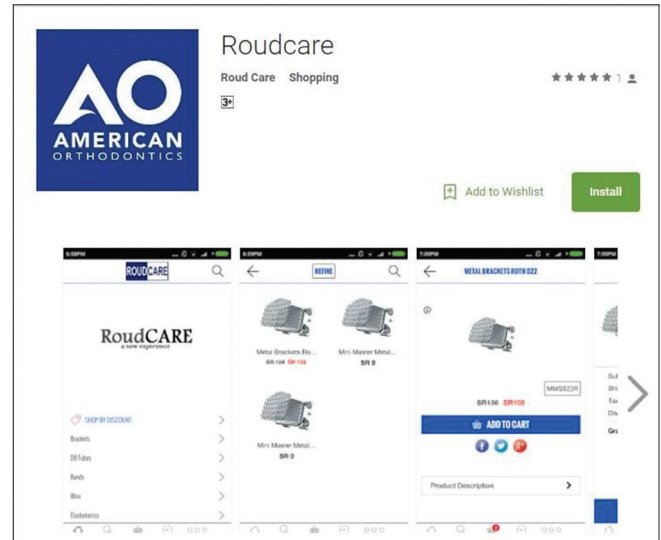


Figure 7: AO Roudcare

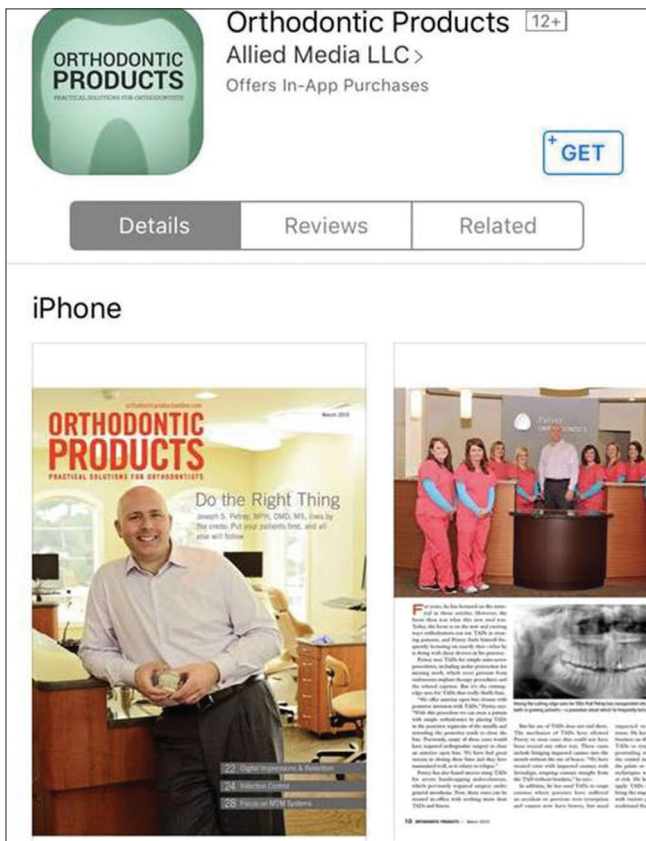


Figure 8: Orthodontic products

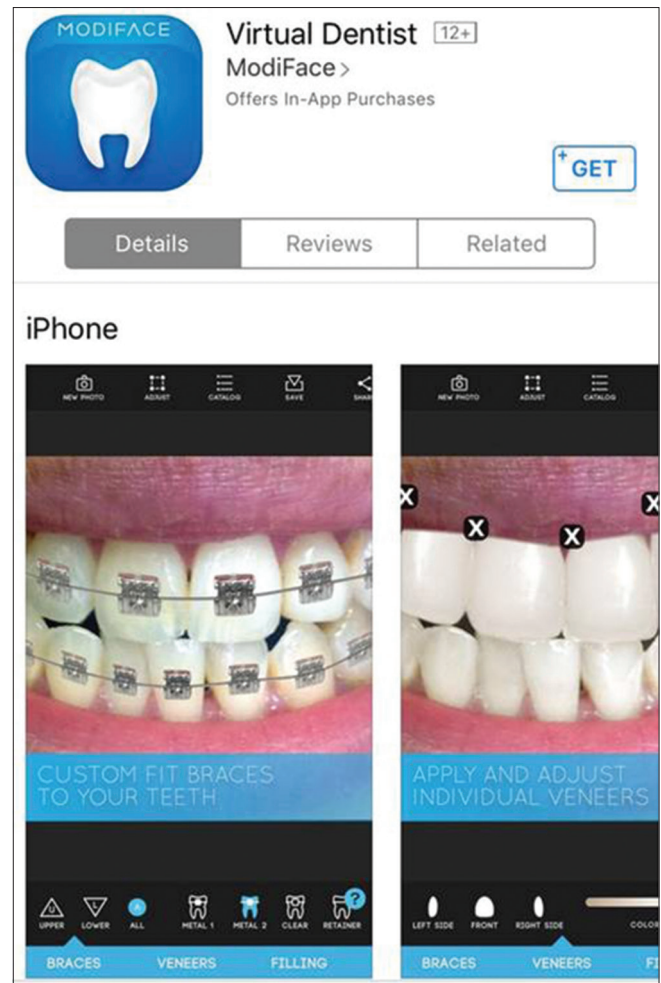


Figure 9: Virtual dentist

Last but not the least, the category of apps includes the orthodontic community apps, for example, Orthotown [Figure 11]. 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.

Apps for patients

Now coming to the apps which deal with patients and in this group, one of the most important categories is the patient education app which actually overlaps with the practice apps because most of the practice apps consist of the patient education also, however, there are exclusive patient education apps like the Braces Booth Pro. 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. One more helpful app in this category is the BraceMate app [Figure 12]. 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. 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 [Figure 13] during active orthodontic treatment or a reminder of aligner wear like Align Remind, Ortho tempo [Figures 14 and 15]. 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.

CURRENT PERSPECTIVES

This is the era of digitization, the orthodontic community is also fast tracking into the digital era. Smartphone usage

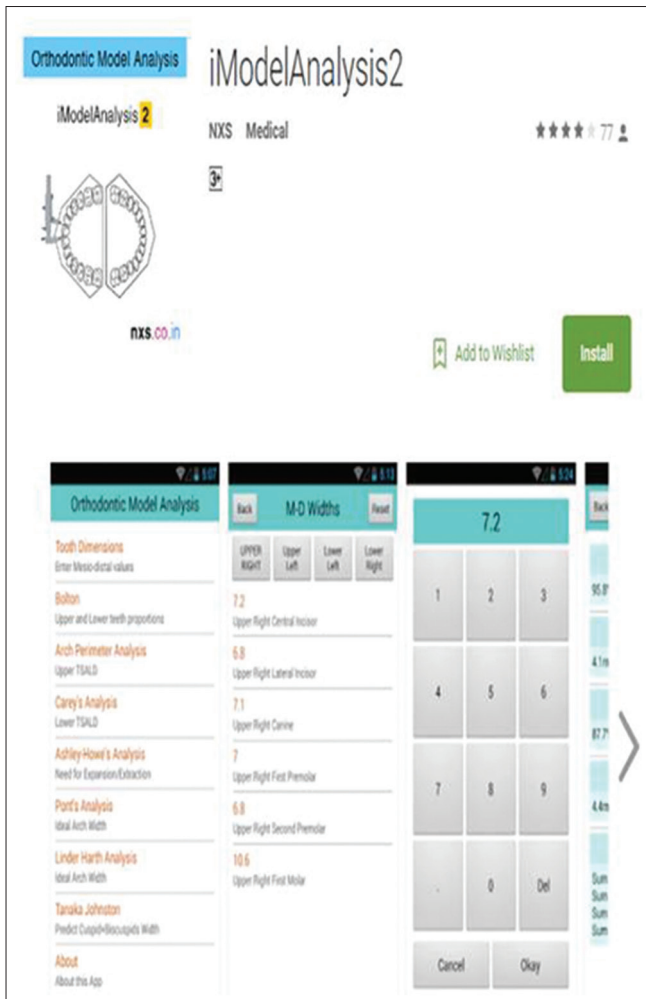


Figure 10: iModel Analysis 2

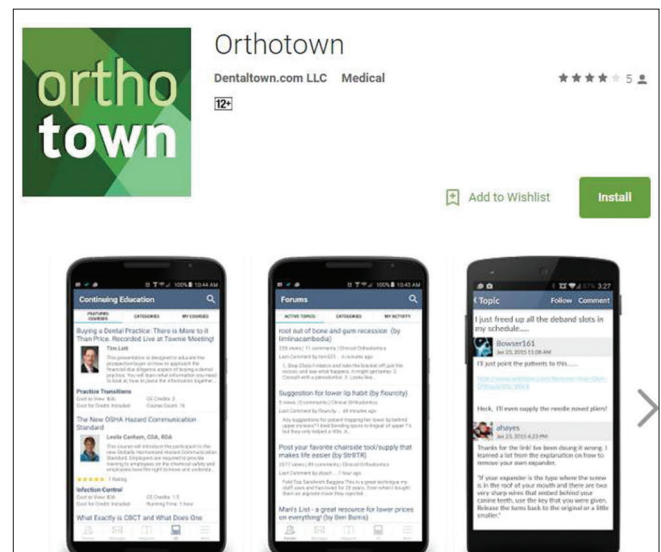


Figure 11: Orthotown

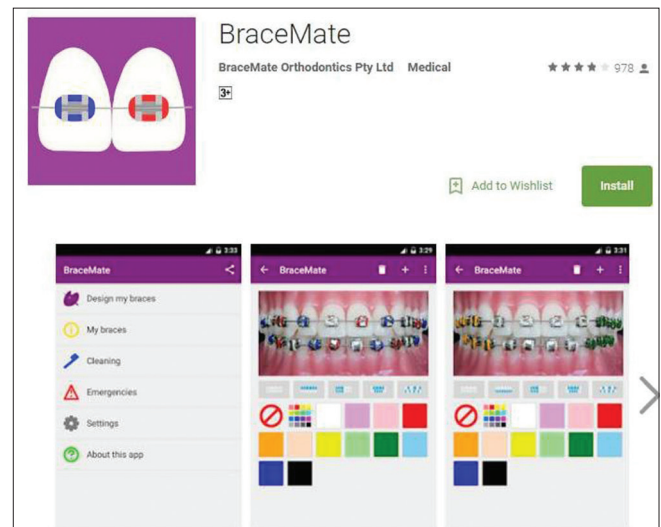


Figure 12: BraceMate

Table 2: Apps for orthodontist		
Operating system	Category	Number
iOS	Orthodontist app	
	Clinic apps/practice management	89
	Publications/journals/magazines	27
	Orthodontic products	10
	Apps aiding in diagnosis	8
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Android	Orthodontist app	
	Clinic apps/practice management	95
	Publications/journals/magazines	15
	Orthodontic products	7
	Apps aiding in diagnosis	10
	Orthodontic conferences	14
	Tooth ratio calculators	5
	Orthodontic news	2

Table 3: Apps for patients		
Operating system	Category	Number
iOS	Patient apps	
	Orthodontic education	26
	Reminding patients about elastic wear	3
	Reminding patients about aligner wear	2
	Dealing with orthodontic emergencies	2
	Progress tracker	2
	Total	35
Android	Patient apps	
	Orthodontic education	18
	Reminding patients about elastic wear	2
	Reminding patients about aligner wear	2
	Dealing with orthodontic emergencies	1
	Progress tracker	4
	Total	27

is rampant and popular. Extending orthodontic practices into smartphone platforms are the need of the hour and also seem to be in vogue. The search was carried out using two smartphones that are in common use today and using operating systems that are available on most phones. The search yielded a total of 354 apps related to orthodontics. Of these 354 apps, 292 were orthodontist-related apps and 62 were patient-related apps. The apps were further analyzed for the information they offered and their utility. After analyzing all the apps, it was concluded that numerous apps are available for the use of both the orthodontist and patient.^[5]

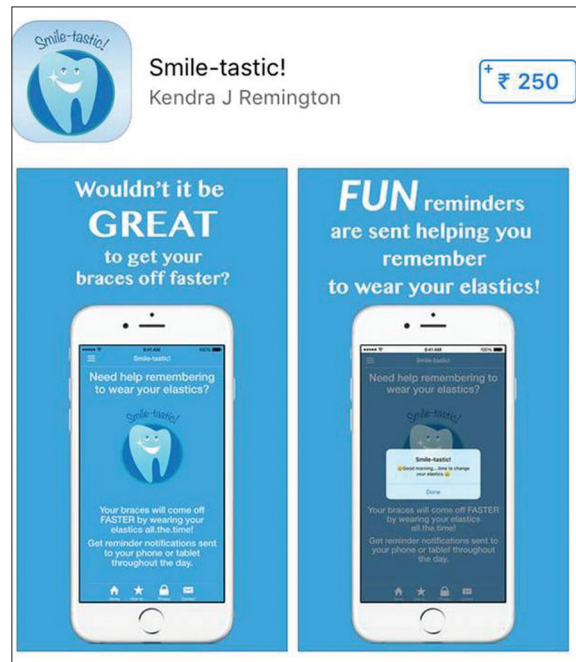


Figure 13: Smile-tastic

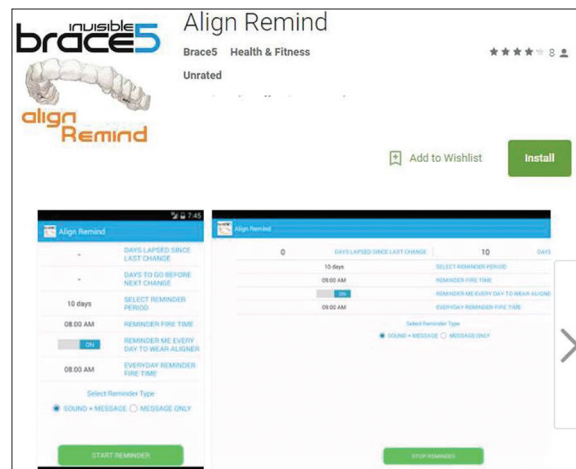


Figure 14: Align Remind

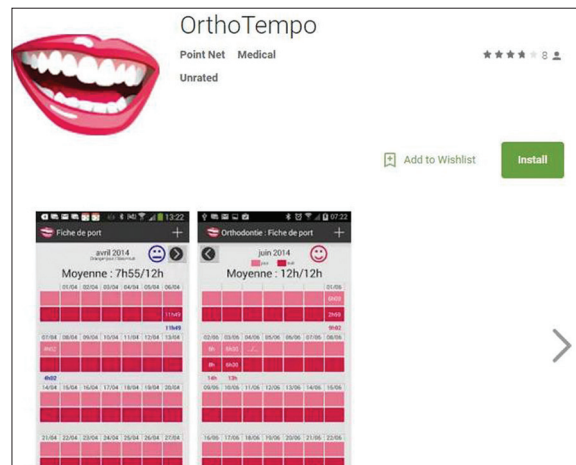


Figure 15: Ortho tempo

Smartphones have made it easier and convenient for both the clinician and patient to access orthodontically relevant information at the click of a button. In future, smartphones will act as mini virtual offices where practice management and patient education can be done with a handheld device.^[6]

Apps on smartphones are indispensable orthodontic inventories of the future, or perhaps even the present. Their infusion into orthodontic care will be at various interfaces, and if current trends are any indication, the number of apps available will only exponentially rise!

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Conflicts of interest

There are no conflicts of interest.

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