



Use of Smartphones by Postgraduate Residents in Orthopedics: A Cross-Sectional Study

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Abstract

Background: *"Utilize Time wisely and Fill up your Treasures" as rightly said by MADAN LAL MANCHANDA. This Quote tells us about the importance of each and every second passing. Smartphones not only make our lives easy and convenient but also save a lot of our precious time especially when we have to access resources and medical knowledge efficiently from across the globe.*

Objective: *Smartphone have changed the way we orthopedic residents work and learn. The main aim of this study is to make an objective assessment of Smartphone use by orthopedic residents and how it acts a useful tool for them in clinical and academic aspects.*

Methods: *This cross-sectional study was conducted in Govt. Medical College Jammu in November 2018. This study is based on a questionnaire form filled by 40 orthopedic residents questioning them about the way they use their Smartphones for academic and clinical purposes and the final inference was drawn from these questionnaire forms.*

Results: *All the residents who were requested to be the part of this study possessed a Smartphone with Android/iPhone platforms and all had active internet connection. Orthopedic apps were installed in Smartphones of 36(90%) residents among 40 residents. Based on our questionnaire form filled by these residents 2 platforms (Android/iPhone) databases were searched for all the medical apps, a total of 10 orthopedic apps were installed in the Smartphones of these 36(90%) residents. As per this survey most widely used apps among these residents were AO Surgery References (AOSR), FC (FRACTURE CLASSIFICATIONS), Trauma Classifications. In addition to these applications orthopedic residents used their Smartphones to read textbooks (E-books) and communicate with their seniors related to any query/guidance when needed.*

Conclusion: *There is a wide use of Smartphones in orthopedics as a learning and educational tool. In addition to this Smartphones act as a convenient way to keep Logbooks and also help resident to keep records of patients with respect to their serial X-rays. Smartphones also bridge gap between the residents and their seniors. Thus health care institutes and hospitals should support proper use of Smartphones in academic, clinical and medical training, while continuing to protect patient confidentiality.*

Keywords: *Smartphones, orthopedic residents, Android/iPhone.*

Introduction

In early 2011, Smartphones overtook personal computers for the first time since their

introduction in 1997 with the proponents being the iPhone and Android platforms. Smartphones are the mainstay of communication in the modern era.

Smartphones in many ways are similar to personal digital assistant (PDAs), which have been studied well in clinical and educational field and proven their value across a variety of apps. There are a number of operating systems which include; Google's Android, Apple's iOS, Research in Motion's BlackBerry and Microsoft Windows Phone platform. On these platforms a user can download and install useful apps Both Free and Paid are available). Smartphones cellular connectivity allows the user to connect to the internet and download these apps even when the wireless networks are unavailable.

Smartphones have been used by medical residents to communicate with their seniors. Orthopedic residents also use these Smartphones to capture clinical pictures and x-rays for record keeping. These pictures can then be shared with the seniors and colleagues for discussions and opinions. Online videos are available for learning purposes; YouTube is one of the largest platforms for watching online educational videos. These videos can be even downloaded that too for free. In addition to this a vast number of orthopedic apps are available to download; these apps are used for quick reviews during emergency duties or ward rounds and also for sharing information updating knowledge through current reference guidelines; drug referencing and dose calculators. These apps can be downloaded from online stores for free or by paying a little amount of money. The use of mobile phones assist the practice of orthopedic surgery has been examined, but the latest development of Smartphones has created new opportunities to integrate mobile technology into daily clinical practice.

However, till date no study has specially evaluated the use of Smartphone apps in orthopedic surgery or evaluated the specific desires and Smartphone functions that cater to orthopedic surgeons for use in clinical practice.

The purpose of this study was to review most used Smartphone apps by the orthopedic residents and the way they clinically and academically use their

Smartphones and make the most out of their training opportunities.

Methods

This cross-sectional study was carried out in orthopedics department of Govt. Medical College Jammu, in November 2018. A total of 40 orthopedic residents were approached and after confirming that they use Smartphones for academic and clinical purposes they were explained about the nature of this study in detail. Then they were requested to fill the questionnaire forms which were handed over to them. They were assured that their identity will be kept confidential.

The questionnaire form was designed containing various questions regarding basic demographics, operating system on Smartphones, use of orthopedic apps, reading EBooks, watching educational videos, any other academic uses. Then this data was compiled and analyzed, then presented as a descriptive statistics.

Results

Among 40 orthopedic residents everyone owned a Smartphone with an active internet connection on it. Out of these 40 residents 36(90%) residents had orthopedic apps installed on their Smartphones. 34(85%) residents had Android devices and 6(15%) residents used Smartphones running iPhone iOS [Figure 1].

Smartphone Platforms used by orthopedic residents

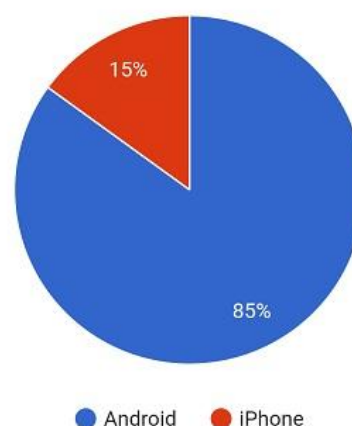


Figure 1

Total of 10 orthopedic apps were installed on their phones and the most common apps used were AOSR, FC, trauma classifications [Table 1].

Orthopedic Apps installed in Smartphones of Orthopedic residents

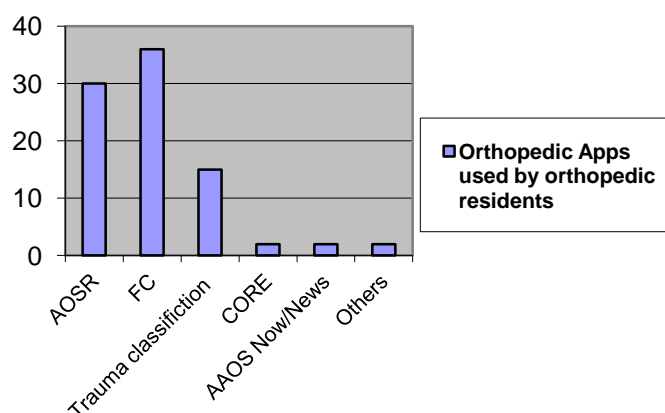


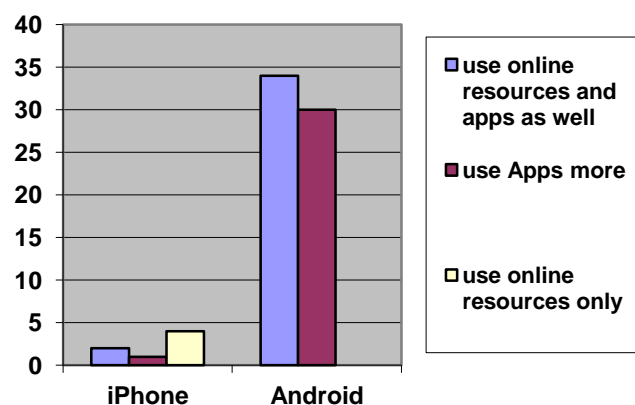
Table 1: Orthopedic Apps installed on the Smartphones of Orthopedic residents

S. No	NAME OF APPLICATION	No.of installed devices
1	AO surgery References	30
2	Fracture Classifications	36
3	Trauma Classifications	15
4	CORE	2
5	AAOS NOW/NEWS	2
6	OrthoAnatomy-Brancel/Clinical	1
7	OrthoFind	2
8	Smith&Nephew Mobile	1
9	Mobile OMT upper extremity/Clinical	1
10	SpineDecide/Education	1

All of the residents said that they carry their Smartphones to hospital every day. All of the residents agreed to the fact that their Smartphones help them in their academics and clinical studies but 4(10%) residents among the total of 40 residents disagreed to the benefits of orthopedic applications(All 4 were iPhone users). All the residents who used Smartphones for academic purposes said they consulted through their devices frequently before assisting any surgical procedure. These consultations not only included orthopedic apps but also online videos, EBooks, Orthopedic online knowledge banks. Out of 34(85%) orthopedic residents with android platform on their Smartphones all of them had orthopedic apps

in their Smartphones and 30(75%) residents used these apps more frequently, a remaining 4(10%) residents used both apps and online resources. Out of 6 (15%) residents with iPhone iOS platform on their phone 4(66.66%) residents used only online resources and never used orthopedic apps as they thought that they are not reliable enough while the remaining 2(33.33%) iPhone users used both online resources and orthopedic apps with 1(16.66%) iPhone user among these 2(33.33%) using apps more commonly [Figure 2].

Figure 2: Types of resources used by 40 orthopedic residents who use their Smartphones for clinical/academic purposes.



Despite all these advantages of Smartphones all of the orthopedic residents said in their questionnaire forms that conventional textbooks are superior to EBooks.

Discussion

The possession of Smartphones by every orthopedic resident itself is a proof that how these Smartphones has become an essential part of everyday life both within and out of clinical practice. Smartphones are now fully equipped with high resolution cameras, good storage, Wi-Fi enabled, easy internet access, featured with useful apps like orthopedic apps, whatsapp etc which help in clinical discussions. Most important is that their small size with fully loaded features as mentioned above make them orthopedic residents best buddy of which he can take advantage anytime he wants. In our study we also observed

that a no. of residents used their Smartphones for sharing clinical data with colleagues and seniors. As radiology is most important part of orthopedics in assessment of trauma patients, by sharing X-rays and clinical pictures with seniors and getting their opinions, orthopedic residents will definitely contribute better towards patient care.

There are a no. of Smartphone apps available and according to a study there are around 10,275 medical apps on various online stores which include a lot of superspeciality apps also. In our Study 40 orthopedic residents were found using Smartphones among which 34 residents used Android platform and 6 residents used iPhone. Out of 6 iPhone users 4 residents never used any medical app on their phone as they thought these apps are not reliable enough and remaining 2 residents used both online resources and apps with 1 resident among these 2 using downloaded orthopedic apps more frequently. Among the 34 Android using residents 30 residents used downloaded apps more frequently but also used online resources. However all the 40 residents used their Smartphones for Academic/clinical practices.

Smartphones help in long distance communications between health care institutes and hospitals especially between sub-district hospital in peripheries to the nearest possible tertiary care hospital and thereby helping shifting the trauma patients to the desired trauma unit. In addition to this it will also help the recipient clinical team to make necessary arrangements in the meantime like arranging a skilled personnel, operation theatre etc. This is important for developing countries like India where advanced trauma centers are not available in remote areas (Peripheries). In case of any major RTA in which orthopedic injuries are far more common the prior notification from the internet or the first contact health service provider to the orthopedic residents in tertiary care hospital like GMC Jammu, help the residents to get ready and make necessary arrangements and call for any help if needed

hence Smartphones assist the orthopedic residents to provide better healthcare.

Conclusion

All of the orthopedic residents owned a Smartphone. Most of them used orthopedic apps, but some of the residents did not use these apps due to reliability issues. Sharing of clinical data and X-rays has now become a trend among the orthopedic residents; this gives them a boost, confidence and motivation. Patient confidentiality remains a topic of debate. Watching online videos from YouTube by most expert surgeons throughout the world to learn, refresh the surgical knowledge and achieve the expertise is now a new trend for orthopedic residents and their seniors. EBooks are available online but our residents at orthopedics department still prefer conventional Textbooks.

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PROFORMA FOR STUDY ON SMARTPHONES IN ORTHOPEDICS

NAME: _____
AGE: _____ SEX: _____
POSITION: _____ YEAR: _____

Questions

1. Which Smartphone Platform do you use?

2. Do you have any orthopedic app in your Smartphone?
I) _____ II) _____ III) _____
3. Have you downloaded these apps for free or paid for them (If paid how much)?
_____.
4. How often do you use these apps?
I) _____ II) _____ III) _____
5. How much useful these apps are while dealing with clinical situations?
_____.
6. Do you watch/Download online orthopedic videos?
_____.
7. Do you use your Smartphone to keep Patient records and x-rays?
_____.
8. Do you read/download EBooks?
_____.
9. Do you think EBooks are superior or inferior to conventional textbooks?
_____.
10. How often you use your Smartphone to consult your seniors for clinical queries/discussions?
_____.
11. What do you think about Smartphone use in orthopedics? (Useless/ Useful/very useful).

Thank you

Signature