

# Benefits and side effects associated with use of healthcare educational applications and websites among medical students of Sheikh Zayed Medical College, Rahim yar khan

Hafiz Umer Farooq,<sup>1</sup> Sadia Zulfiqar,<sup>2</sup> Zaffar H Tanveer,<sup>3</sup> Muhammad Hussain Cheema,<sup>4</sup> Khurram Munir,<sup>3</sup> Asghar Ali<sup>5</sup>

## Abstract

**Background:** In this information age, traditional ways of education are reinforced by internet related applications and website.

**Objective:** To determine the benefits and side effects of the healthcare applications and websites used among medical students of Sheikh Zayed Medical College, Rahim Yar Khan,

**Methodology:** Setting: Sheikh Zayed Hospital, Rahim Yar Khan. Duration; 1<sup>st</sup> July to 31<sup>st</sup> December 2018. This cross sectional study included medical students of 2<sup>nd</sup> year or more in which the students were enrolled for both genders, irrespective of age. They were asked to fill up a questionnaire in which information was collected regarding their demographics, types of the health care application used and its benefits and risk/side effects noted.

**Results:** In the present study, 300 medical students were enrolled with a mean age of 22.61±2.37 year. There were 156 (52%) males and 144 (48%) females. The most common application used was Google, which was used by 280 (93.33%) of the subjects, followed by Wikipedia used by 110 (36.67%) of the students. The major benefit was convenience and ease to access described by 270 (90%) of the cases and it was followed by reliability and help to add medical knowledge seen in 83.33% and 76.67% of subjects respectively. The major risk was confusion due to added information by various sites reported by 70 (23.33%) of the cases and headache seen in 65 (21.67%) of cases.

**Conclusion:** Health care associated application or websites usage is common and the most commonly used one is Google and the main side effect or risk noted is confusion.

**Keywords:** Google, Wikipedia, Confusion, Applications, Website, Medical Students

## Introduction

Technological advancement has impacted a great deal to the health care profession and also made a number of changes in the patient care and clinical practices.<sup>1</sup> There are number of health care gadgets and applications that are being used in day to day activities not only by doctors but also by the medical students regarding end point care of the patients.<sup>1</sup> Mobile phones and its health related applications are the most widely employed example of this. The modern day data has also supportive evidence for this in medical students. These are used for various purposes i.e. sharing books and reading stuff and also group management can be done with single application like drop box with multiuser facility.<sup>2</sup> The other applications are Medline, QxMD, PICO, PubMed, Google Scholar Uptodate, MedScape and many more which have the benefit in ease of access to various medical journals and online news regarding approval and withdrawal of latest drugs

in the form of various applications like which can be used as an example to quote at different sites.<sup>3-5</sup> It has been seen that 60% of the journals are accessed through smart phone and more than 70% of the news are accessed through the same.<sup>6</sup>

The data has further shown that there is increased level of productivity after the usage of these applications especially it adds to overall confidence due to access to the recent stuffs, and furthermore, it also saves the time to a big deal which has its impact to spare time for the other tasks.<sup>7</sup> But contrary to that, sometimes it adds to overall depressive or anxiety state, as the latest technologies are not available in the developing countries like Pakistan which can have an adverse impact.<sup>6,7</sup> Moreover, reliability of the data is significantly higher in these time tested applications and hence these are frequently used for quoting the texts but too much dependency may add to hamper the overall thinking process and may reduce the capabilities of the candidates to brain storm and to think out of the box.<sup>8</sup> There are always

1. Department of Community Medicine, Sheikh Zayed Medical College/Hospital, Rahim Yar Khan, University of Health Sciences, Lahore, Pakistan.

2. Department of Obs. & Gynaecology, Sheikh Zayed Medical College/Hospital, Rahim Yar Khan, University of Health Sciences, Lahore, Pakistan.

3. Department of Physiology, Sheikh Zayed Medical College/Hospital, Rahim Yar Khan, University of Health Sciences, Lahore, Pakistan.

4. Department Public Health, Institute of Public Health Lahore, Pakistan.

5. Department of Orthopedic, Sheikh Zayed Medical College/Hospital, Rahim Yar Kha, UHS, Lahore, Pakistan.

**Correspondence:** Dr. Hafiz Umer Farooq, Assistant Professor, Department of Community Medicine, Sheikh Zayed Medical College/Hospital, Rahim Yar Khan, Pakistan.

**Email:** dromer112233@gmail.com

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benefits and risks of every entity and hence for this purpose this study was planned, to determine the benefits and side effects of the healthcare applications used among medical students of Sheikh Zayed Medical College, Rahim Yar Khan.

### Methodology

This cross sectional study was carried out at Sheikh Zayed Hospital, Rahim Yar Khan 1<sup>st</sup> July to 31<sup>st</sup> December 2018. This included medical students of 2<sup>nd</sup> year or more in which the students were enrolled of both genders, irrespective of age via non probability consecutive sampling. They were asked to fill up a questionnaire in which information was collected regarding their demographics, year of education, types of the health care application used and its benefits and risk/side effects noted. Ethical approval was sought from institutional review board. Data was analysed by using SPSS version 16.

### Results

In present study, 300 medical students were enrolled with a mean age of 22.61±2.37 year. There were 156 (52%) males and 144 (48%) females. The most common application used was Google, which was used by 280 (93.33%) of the subjects, followed by Wikipedia used by 110 (36.67%) of the students. (Table I)

**Table I: Type of application used (N= 300)**

Type of application	Number	%
Google	280	93.33
Wikipedia	110	36.67
Medscape	45	15
WebMed	5	1.67
Uptodate	4	1.33
PubMed	2	0.67

The major benefit was convenience and ease to access described by 270 (90%) of the cases and it was followed by reliability and help to add medical knowledge seen in 83.33% and 76.67% of subjects as in table II. The major risk was

confusion due to added information by various sites reported by 70 (23.33%) of the cases and headache seen in 65 (21.67%) of cases. High cost of the few apps was reported by 20 (6.67%) of subjects as shown in table II.

**Table II: Benefits of the applications used (n= 300)**

Benefits of the applications	Number	Percentage
Convenience/ Ease to access	270	90
Reliability of apps	250	83.33
Help to add medical knowledge	230	76.67
Preparation of notes and presentations	58	19.33
Add to confidence of recent knowledge	25	8.33
Decision and diagnosis making	24	8
Risks and side effects of the applications used	Number	Percentage
Confusion	70	23.33
Headache	65	21.67
Depression/ Anxiety	35	11.67
Cost	20	6.67
Wrong information	10	3.33

### Discussion

Health care application usage is on the rise in the recent times and there is great degree of dependence amongst the health care professional and medical students regarding acquiring knowledge as well as end point care of the patients. Mobile phone, tablets, smart devices, palm tops and internet are the key tools which have been seen in day to day activities. The improvement in patient care is one big deal, but nothing is devoid of the side effect profile and hence; to keep a balance between these two is the key to success.<sup>9,10</sup> In the present study, the most common application used was Google which was used by 280 (93.33%) of the subjects, followed by Wikipedia used by 110 (36.67%) of the students. These results were comparable to the findings of the previous

studies which they revealed that the Google was the most commonly used app.<sup>11,12</sup> In a study done, by Nina CE et al revealed that this was used in their 80% of the subjects to acquire medical knowledge and they also had the Wikipedia as the 2<sup>nd</sup> most common app and was used for 71% of their subjects.<sup>13</sup> Starmer K also found this in 71% of their cases.<sup>14</sup>

The major risk was confusion due to added information by various sites reported by 70 (23.33%) of the cases and headache seen in 65 (21.67%) of cases. High cost of the few apps was reported by 20 (6.67%) of subjects. The data regarding the risks were scare but revealed that confusion due to various site information was a big issue especially in cases with cut off values of various investigations and also the different local criteria.<sup>15,16</sup> In the present study, UptoDate was used by only 1.33% of the cases and 6.67% of the subjects reported a higher cost of the apps and their limitations for its usage. In a study from developed nation found that their doctors and students used this Uptodate application in around 85% of the cases.<sup>16</sup> The studies done by Adegbilero-Iwar I et al and Fiol GD et al also described that application usage to get required and targeted knowledge is better in higher age groups and senior fellows as compared to younger age group.<sup>17,18</sup> The studies have shown that the usage of this technique has increased the productivity significantly by changing it from 52% to 64% of the candidates with p value pf 0.03.<sup>10,11</sup> In another study done on health care professionals described a significant higher degree of diagnosing various diseases by different applications on mobiles with p= 0.0001.<sup>8</sup>

## Conclusion

Health care associated application usage is common and the most commonly used one is Google and the main side effect or risk noted is confusion.

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