

# Does the use of 'smartphone' technology enhance undergraduate medical education?



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## Background

The last decade has seen the introduction of a new technology which has transformed many aspects of our culture, commerce and communications. Smartphones are now becoming an extension of lifestyle with an increasing amount of the population now owning this technology. With the rapid access to information, instant communication and improved organisation this technology has been gaining recognition as an educational tool particularly in medical education. Medical students perceive the use of smartphones makes them more efficient and allows them to provide better patient care. A vast majority of medical students are using their personal smartphones within the clinical environment. However, many students do not feel that the medical school curriculum or role modelling has educated them on appropriate and inappropriate ways to use their personal smartphone for clinical work.<sup>1</sup>

## Aims

- To ascertain by means of a systematic review of the literature the extent and nature of publications in this area.
- Secondly to critically review any studies in this area to answer the research question; 'Does the use of 'smartphone' technology enhance undergraduate medical education?'

## Results and thematic analysis

17 studies were included in this assessment. Some themes emerged from these studies.

- A positive aspect of this technology was given as just-in-time-learning.
- Negative aspects of this technology were learning via apps led then to a more superficial type of learning and occasion reported feeling uncomfortable using this technology in the clinical setting where patients may see them.

## Methods

- A search of the Medline, Embase, PsychInfo and Scopus databases was carried out during the period of April 2016 to June 2016.
- The following terms were used to search the databases: medical student\*, medical education, undergraduate\*, smartphone\*, iPhone\*, android, BlackBerry, Samsung, mobile phone, cellular phone, app, apps, and app's.

## Conclusions

This research has shown that smartphones are becoming an extension of lifestyle and being integrated into our daily lives in many ways. With the increased prevalence of these devices in daily life they are now also becoming an essential part of both clinical work and medical education. The studies reviewed all highlight the potential of the smartphone to enhance medical undergraduate education. However, the studies reviewed were limited by methodical flaws which hampered valid conclusions. Further research is required to provide better quality of evidence on how these devices can be integrated successfully into the medical undergraduate curriculum.

## Results

Figure 1: PRISMA flow diagram to illustrate the search process

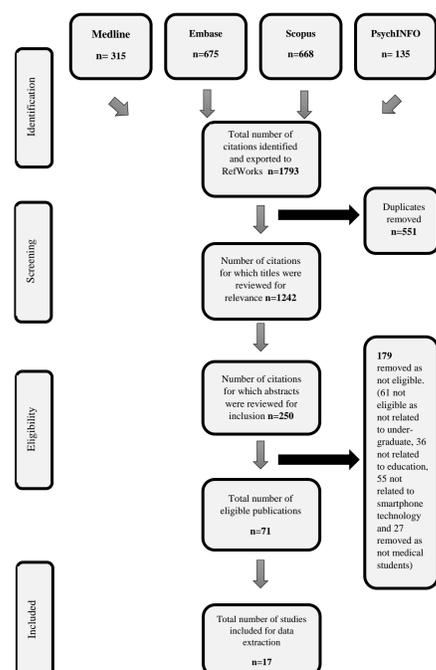


Figure 2: Table demonstrating the types of publication found

Publication Type	Number
RCT	3
Non-randomised controlled trial	2
Observational cohort study	2
Mixed methods study	4
Descriptive study	6
Letter/ editorial	16
Narrative review	16
Literature review	2
Systematic review	0
Conference proceedings/ abstract	17
Description of innovation	3
<b>Total</b>	<b>71</b>

There are also other considerations which need to be addressed other than the obvious ones, relating to the delivery of medical educational resources if these devices are to be encouraged by medical schools. This was described as the hidden curriculum by Ellaway and would need to include an 'etiquette' for use of these devices including confidentiality issues, how to best use them in the clinical setting and indeed even infection control issues.<sup>2</sup>

## References

1. Tran K, Morra D, Lo V *et al.* Medical Students and Personal Smartphones in the Clinical Environment: The Impact on Confidentiality of Personal Health Information and Professionalism. *J Med Internet Res.* 2014; 16(5): 132.
2. Ellaway R. The informal and hidden curricula of mobile device use in medical education. *Medical Teacher.* 2014, Jan; 36(1):89-91.