Scientific Research

The Use of Social Media in Medical Education: A Literature Review*

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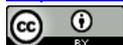
Abstract

Social networks are frequently used by university students, as well as by the rest of the population worldwide to communicate, collect information, and share information and images. The aim of this report was to determine if there was substantial evidence in the literature that demonstrated the benefits of using social networks to enhance the learning process, as measured by students' performance on examinations. The main outcome measures were any measurable difference between students who used social networks as part of their education compared to those who did not. A systemic literature search was performed in the PubMed database using predefined search terms, exclusion/inclusion criteria, and primary/secondary criteria. The results disclosed in total, 636 publications were identified; however, only 77 articles met the criteria for inclusion and exclusion. After applying secondary filter criteria, 18 publications were identified that included randomized comparative studies, review articles, and meta-analyses. A review of the list of references in these publications revealed an additional seven articles. The findings demonstrate that although social media represents an important source of medical information that is widely used in education and in everyday lives, no studies have reported that it has a significant impact in enhancing the learning process. Additional comparative studies are needed on this topic.

Keywords

Medical Education, Social Media, Learning, Outcome, Examinations, Feedback, Reading

1. Introduction

University students regularly use smartphones, tablets, and computers to instantly retrieve necessary medical information, read the literature necessary for their courses, and collect, communicate, and share information and

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imaging. Indeed, some students systematically use social media in their education as well as in their everyday lives (Cartledge, Miller, & Phillips, 2013; Guarino, Leopardi, Sorrenti, De Antoni, Catania, & Alagaratnam, 2014; Hollinderbäumer, Hartz, & Uckert, 2013; Paton, Bamidis, Eysenbach, Hansen, & Cabrer, 2011; Paton, Bamidis, Eysenbach, Hansen, & Cabrer, 2011; Svinicki & McKeachie, 2011). The use of social networks and the internet are well-established tools in education that may strengthen the learning process and enhance professional development (Crossley, Humphris, & Jolly, 2002; Farooq & White, 2014). However, it is debatable if social network tools are truly equally or even more effective than other educational tools used for educational purposes (Crossley, Humphris, & Jolly, 2002). We determined if there was substantial evidence in the literature on medical education demonstrating the benefits of using social networks to enhance the learning process, as measured by students' performance on examinations. To the best of our knowledge, this is the first study of its kind.

2. Methods

2.1. Search Strategy

A systemic literature search was conducted. The PubMed database was searched with predefined search terms, inclusion/exclusion criteria, and primary/secondary criteria; data were retrieved according to the active query filter in PubMed. All potential publications from PubMed between September 2010 and August 2014 were identified. The following terms were used in the search: "medical education" AND "social media". The search provided 637 results from PubMed; only reports written in the English language, free full-text articles, and reports in humans were included. The query filter included the 5-year period studied, which resulted in 77 publications; when the secondary filter criteria were applied, 18 publications were identified as randomized comparative studies, review articles, and meta-analyses. The references were reviewed in these articles to find additional publications.

2.2. Inclusion Criteria

Comparative studies of examination outcomes between students who used social media and those who did not were selected. The primary outcome measures were examination results, and the endpoint was the examination at the end of the course.

2.3. Data Extraction

Retrieved articles were assessed for eligibility, after which data were extracted on student learning outcomes, as determined by examination results, and the methodological quality of the report.

2.4. Methodological Quality of the Studies

The methodological details of the included studies were extracted from the published data.

2.5. Statistical Analysis

The intention was to use Review Manager 5.1.6 software by the Cochrane Collaboration for statistical analysis. For dichotomous variables, the odds ratio (OR) and associated confidence interval were calculated. For continuous outcomes, the results were expressed as the mean and its calculated standard deviation. Meta-analyses of pooled data from the comparative studies, performed by using a fixed effect model, were not included in the study.

3. Results

Description and Quality of the Studies

The results of the systematic search in PubMed, which was performed in September 26, 2014, identified 637 publications. All but 77 were excluded after filtering for the following primary criteria:
   -Humans;
   -Free full-text articles;

-Publications only written in the English language;
-During the last five years.
A secondary filter was used to differentiate between types of publication:
-Meta-analysis (0 publications);
-Review articles (12 publications);
-Comparative studies (6 publications).
After applying the aforementioned secondary criteria, 18 publications were identified (**Figure 1**). There were no duplicate publications. A review of the list of references in these publications revealed an additional seven articles.

4. Discussion

We analysed the data from comparative studies to determine if students who use social media in their learning process have better examination outcomes. However, we did not find any publications that reported a significant learning advantage in university students who used social networks as part of their education, as measured by students' performance on examinations. A single recent report on the subject did not have measurable students' performance on examinations as an endpoint of the study (Cheston, Flickinger, & Chisolm, 2013). It is plausible that people accept new technologies without demanding evidence of their superiority, regarding enhancing the learning process, compared to time-honoured strategies. Frankly, social media has many other advantages that make people's lives easier and more comfortable.

The importance of feedback in medical education has been described (Hattie & Timperley, 2007), and can easily and comfortably be achieved using social media. The question that arises is whether students' communication through social media benefits their learning process, and improves their knowledge, motivation, and outcome on examinations compared to their peers who do not use these tools. There certainly are methods to measure differences between students who consistently use social media and those who do not, so why have these methods not been used? One possible reason is that a randomised or even comparative study would be difficult to perform since social media is now an integral part of people's lives. Thus, it would be challenging to compare two groups of students over a considerable period of time, in which one group systematically uses social media as part of their learning process, while the other group does not. The latter group would have to be excluded from using something that is most likely already an indispensable part of their lives and daily routines.

It is tempting to think that social media can provide students with all of the necessary support to pursue their educational goals, such as reading materials, which can be easily be obtained and read on smart phones or tab-
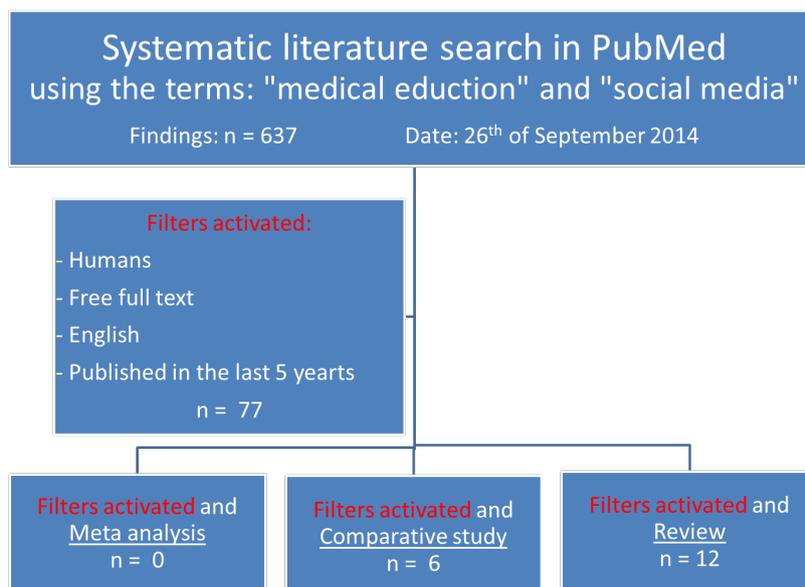
Figure 1. Results of PubMed search for publications of comparative studies on the outcome of examinations in students who systematically used social media to enhance the learning process and those who did not use this tool.

lets. In addition, the text found on the internet can be updated frequently, contrary to what occurs for textbooks. Thus, one of the main goals of making reading an active part of student teaching can be achieved (Svinicki & McKeachie, 2011).

Teaching online or from a distance is well-described in the literature, and its pros and cons have been thoroughly discussed, leaving us with the recommendation to use technical resources to advances student learning (Svinicki & McKeachie, 2011). If a course is carefully designed, and the goals and measurable learning objectives are properly defined, social media can be an important enhancement tool. However, it should be linked to meaningful activities that help students reach their learning objectives. Furthermore, social media is an important and easily used for delivery of instructions, communication, and interaction, as well as for assessment of the learning process (Svinicki & McKeachie, 2011).

The literature describes the use of online groups for synchronous and asynchronous communication that is performed more easily using social media (Svinicki & McKeachie, 2011). This can easily be achieved by using social media and is already discovered by students using social media for all kinds of communications. Teaching students how to learn through discussion is an important part of medical education (Svinicki & McKeachie, 2011). This includes the ability to clearly convey information and a willingness to effectively communicate with their teachers and peers. It is also important to plan for discussions and build upon others' ideas. Furthermore, a necessary skill is being able to evaluate what is said during a discussion, and having sensitivity towards the feelings of other members in the group (Svinicki & McKeachie, 2011).

This study was biased by the fact that it was based on literature published during a very short period of time, 5 years, and only drew from two databases. Furthermore, it concentrated on publications in the English language and in open assesses journals. The latter were considered the most accessible information available on the subject.

5. Conclusion

There are lacks of randomised comparative studies on the outcome of examinations in students who use social media for the learning process compared to those who do not. Therefore, further studies are needed, and databases should also be searched over a longer time period. Social media is now a natural part of people's everyday lives. Its existence is not questioned. Thus, the key question to ask is not if social media will improve the student learning process, but rather, how much more could the student learning process improve through the use of social media?

Acknowledgements

Conflicts of Interest

The author has no conflicts of interest to disclose.

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