ORIGINAL ARTICLE

Evaluation of the Effect of Short Message Service on Teaching Key Points in Pediatrics

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Received: September 19, 2014
Accepted: December 29, 2014

Background: Nowadays, due to the emergence of new and advanced technologies, methods of medical education have undergone several changes. Because students often spend many minutes per day using mobile phone and its features, and this is a great attraction for them. This study was an attempt to assess the capabilities of the mobile phone technology to be used for teaching the key points of pediatrics.

Methods: this study is a survey research. The population of this study includes medical students in the 93-92 school year who were selected in three different course of pediatrics. Available samples were selected from extern students (n = 85) and interns of pediatrics department (n=37). In this study multiple-choice questions were designed according to selected topics of courses which were taught during the period of externship and internship. Every day for 30 days one question was send via short message service (SMS) to students of pediatrics department. Students read the question and sent back the correct answers by text message as soon as possible. At the end of the course, also a researcher-designed questionnaire was used to assess the students' attitudes toward the usefulness of this method.

To assess the validity of the questionnaire, content validity was used and the reliability was assessed with Cronbach alpha coefficient of 0.80. Data were analyzed using SPSS16. Data analysis was performed in two levels of descriptive statistics (mean and standard deviation (SD)) and inferential statistics (One-Sample and independent t-test).

Results: Mean ($\pm$ SD) score of the questionnaire for extern students and interns were 4.44 ± 0.56 and 4.45 ± 0.59 respectively, and given that these means were significantly higher than 3 (cut-off point), this shows a desirability of the project of sending short messages from the perspective of medical students of pediatrics department. The difference between the average scores of extern students and interns in level of $\alpha=0.5$ was not statistically significant (p= 0.92, t=0.08).

Conclusions: This study showed that the usage of short message service in the educational system has a positive effect on medical students learning, furthermore, students and interns believed that continuing this educational program has a good efficiency for their future career.

Keywords: Modern Education; Pediatric Interns; Short Message Service; Cell Phone

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دراسة تأثير الرسالة القصيرة الهاتفيه (sms) في تعليم طب الاطفال

المقدمة : نظرا لظهور تقنيات جديده و متطوره ، اساليب التعليم الطبيه ايضا تغيرت بشكل بارز . نظرا الى ان استعمال الطلاب للهاتف النقال خلال اليوم ازداد بشكل ملحوظ، هناك رغبه كبيره في استخدام هذه التقنيه. تسمى هذه الدراسه الى استعمال القابليات الموجوده في الهاتف النقال في مجال التعليم.

الاسلوب : تعتمد هذه الدراسه على الاسلوب السبري و المجموعه التي خظمت لهذه الدراسه هم طلاب الطب العام في عام ٩٢-٩٣ في ثلاث دورات مختلفه من مرحله طب الاطفال. المجموعه مؤلفه من ٨٥ طالب ستاج و ٣٧ طالب انترن تم اختيار اسئله من المواضيع المطروحه عند سرير المريض و تم طرح هذه الاسئله بشكل اربعه اجوبه عبر رساله هاتفيه قصيره sms بشكل يومي.

في النهايه تم استخدام استمارات محققه من جهه احصائيه لمعرفه رؤية الطلاب جراء استخدام هذا الاسلوب. نتيجه التحقق من الاستماره قدرضريب الفا كرانباغ ٠،٨٠ . تم تحليل المعطيات بواسطه برنامج spss16 تحليل المعطيات تم عبرالاحصاء التوصيفي (المعدل وانحراف المعيار) والاحصاء الاستباطي (t ذونوزج واحد و t المستقل).

النتائج : معدل و انحراف المعيار علامه الاستماره عند طلاب الاستناج و الانترن كان على الترتيب التالي (٤،٤٤±٠،٥٦) و (٤،٤٥±٠،٥٩) و نظرا الى ارتفاعها بشكل ملحوظ عند عدد الثلاثه (٣) دل على حسن هذا الاسلوب فرع المعدل بين المجموعتين كان (٠.٠٥=α) الذي لم يكن اختلاف ذوقيمه احصائيه (t=0.08, P=0.92)

الاستنتاج: اشارت هذه الدراسه الى رؤيه الطلاب من استخدام الرساله القصيره الهاتفيه sms من مجال التعليم كانت ايجابيه و استعمال هذا الاسلوب في مجال التعليم يعتبر امرمجيد.

الكلمات الرئيسيه: التعليم الحديث ، طلاب دورة الاطفال، الرساله القصيره الهاتفيه ، الهاتف النقال.

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ارزیابی تاثیر سامانه پیام کوتاه در آموزش نکات کلیدی طب کودکان

مقدمه: امروزه با توجه به ظهور فناوری های جدید و پیشرفته، شیوه های آموزش در پزشکی نیز دستخوش تغییرات زیادی شده است. با توجه به اینکه روزانه دقایق زیادی از اوقات دانشجویان صرف استفاده از تلفن همراه و امکانات آن می شود و این مسئله برای آنها دارای جذابیت فراوانی است. در این تحقیق تلاش گردید تا از قابلیت های تلفن همراه در جهت آموزش نکات کلیدی طب کودکان استفاده گردد.

روش: تحقیق حاضر از نوع تحقیقات پیمایشی است. جامعه آماری مورد مطالعه این تحقیق شامل دانشجویان پزشکی عمومی است که در سال تحصیلی ٩٢-٩٣ و در سه دوره مختلف بخش کودکان را انتخاب نمودند. نمونه در دسترس از کارآموزان کودکان (٨٥ نفر) و کارورزان اطفال (٣٧ نفر) انتخاب شدند. در این تحقیق از نکات ذکرشده بر بالین بیمار سوالات چهار گزینه ای طرح گردید و از طریق سامانه پیام کوتاه هر روز یک پیام کوتاه در غالب یک سوال چهار گزینه ای برای کارآموزان و به مدت ٣٠ روز ارسال شد. کارآموزان سوال را مطالعه و و در اسرع وقت پاسخ صحیح را به وسیله پیام کوتاه ارسال نمودند. در پایان دوره جهت بررسی نگرش دانشجویان نسبت به سودمندی این روش از پرسشنامه محقق ساخته استفاده گردید. برای سنجش روائی پرسشنامه، از روائی محتوا استفاده شده و پایائی آن با ضریب آلفای کرانباخ ٠/٨٠ برآورد گردید. تحلیل اطلاعات به کمک نرم افزار spss١٦ انجام پذیرفت. تحلیل داده ها در دو سطح آمار توصیفی (میانگین و انحراف استاندارد) و آمار استنباطی (t تک نمونه ای و t مستقل) صورت گرفت.

یافته ها: میانگین و انحراف معیار نمره پرسشنامه کارآموزان و کارورزان به ترتیب برابر با (٤/٥٦±) و (٤/٥٩±) (٤/٤٥) بود و با توجه به اینکه از مقدار ٣ (نقطه برش) بطور معناداری بالاتر بوده است این امر نشانه مطلوب بودن طرح ارسال پیام کوتاه از دید دانشجویان پزشکی عمومی اطفال بود. تفاوت بین میانگین نمرات کارآموزان و کارورزان در سطح ٠/٠٥ = α به لحاظ آماری معنادار نبود (٠/٩٢=p و ٠/٠٨=t).

نتیجه گیری: این پژوهش نشان داد که از دیدگاه دانشجویان پزشکی عمومی، استفاده از سامانه پیام کوتاه در آموزش بر یادگیری آنها تاثیر مثبت داشته است و ادامه این طرح از نظر آموزشی کارائی مناسبی دارد.

کلمات کلیدی: آموزش نوین، کارآموزان اطفال، پیامک، تلفن همراه

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طب اطفال کی تعلیم میں ایس ایم ایس کے اثرات

بیک گراونڈ: آج کی دنیا میں مواصلات ٹکنالوجی میں تیز ترقی کے نتیجے میں میڈیکل فیلڈ میں بھی تعلیم کے طریقے بدل گئے ہیں۔ چونکہ میڈیکل طلباء روزآنہ خاصہ وقت موبائل فون پر صرف کرتے ہیں لہذا انہیں تعلیم دینے کے لئے موبائل فون سے فائدہ اٹھایا جاسکتا ہے۔ اسی سلسلے میں یہ تحقیق انجام دی گئی ہے۔

روش: یہ ایک سروے ریسرچ ہے ایک مرتبہ پچاسی اور ایک مرتبہ سینتیس طلباء کا انتخاب کیا گیا۔ انہیں پیڈیاٹریکس کے مختلف موضوعات پر ایس ایم ایس بھیجے جاتے تھے۔ طلباء ان آبجکٹیو سوالوں کے صحیح جوابات فورا بھیج دیتے تھے۔ یہ سلسلہ ایک مہینے تک جاری رہا اور ہر روز ایک سوال بھیجا جاتا تھا۔ کورس کے خاتمے پر ایس ایم ایس سروس سے تعلیم کے مفید ہونے کے بارے میں طلباء کو سوالنامے دئے گئے جن کے ڈیٹا کا تجزیہ کرونباخ آلفا اور ایس پی ایس ایس سولہ سے کیا گیا۔ طلباء کے جوابات سے معلوم ہوتا ہے کہ ایس ایم ایس سروس سے تدریس کافی مفید رہی ہے۔

سفارش: اس تحقیق کے مفید نتائج کے پیش نظر یہ سفارش کی جاتی ہے کہ اس روش کو جاری رکھنا میڈیکل طلباء کے لئے مفید واقع ہوسکتا ہے اورطلباء کو مستقبل میں ان کے کیرئرمیں بھی فائدہ پہنچاسکتی ہے۔

کلیدی الفاظ: ایس ایم ایس، پیڈیائریکس، آج کی دنیا۔

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INTRODUCTION

Education is an important part of the medical profession and plays a key role in promoting public health; therefore, all-encompassing attention is needed. Nowadays, use of traditional methods of teaching are not able to respond the current needs of medical students, so for planning for students to keep pace with the rapidly changing healthcare environment around them, educators of medical students must continuously evaluate and revise education curricula, approaches, and programs used to educate new and practicing physicians and improve the level of their learning. Third wave civilization requires powerful tool to be timely, cost-effective, fast and safe for increasing the knowledge of people (1).

Due to the emergence of new and advanced technologies, methods of medical education have taken significant changes. In recent years, the arena of medical education and learning has undergone fundamental changes with the arrival of information technology.

Although the present areas of teaching and learning were changed a little comparing to other categories from more than two thousand years ago up to now, but today this issue has rapid developments with the help of information technology (2, 3). Mobile phone technology as one of the aspects of the new communication technologies has made its way in the field of education and it was proposed as a mobile-based education. The mobile phone as a communication and information tool could change the traditional methods of verbal education and offers a new definition for learning, as well as providing the areas of learning for students at home, work, travel and eliminated many limitations and solved inefficiencies.

Since 2007, in some countries such as the Great Britain, Sweden and Italy, mobile-based education system has been officially implemented and this system covered 16 to 24 aged students who were deprived of education. This method of learning due to its special features such as transmission technology, miniature, and accumulation and receives; display and control, flexibility of time and place, and decentralization can play a significant role in education (3).

Mobile learning (cell phone) is an extended branch of electronic learning (E-learning) which is compared to other types of E-learning provides easier access to learning content for students and learners (4). Mobile learning opens a new horizon to the formal and informal education. These tools can cross the boundaries of time and place and they are able to create educational events in accordance with the level of understanding of individuals, as well as providing access to the resources in each geographical location (5).

Short message or text messaging is the most important element of mobile communication. This technology provides the process of sending bilateral short messages with limited length between the sender and the recipient. Combining this technology with a computer system and creating short message allows individual to send a set of message (s) to a group of users (6).

Students often spend many minutes per day using mobile phone and its features, and this is a great attraction for them.

According to previous studies, few researches have done regarding training via cell phone in medical school; therefore, in this study, researchers were trying to assess the capabilities of the mobile phone in order to train medical students of pediatrics department.

One of the topics highlighted in pediatrics is teaching key points of pediatrics which is usually the most important chapters of the course is taught to students during the period, But sometimes students assert that key points and the practical issues and their importance are not fully specified in chapters for them and this is one of the main reason of their weakness in testing and clinical approach. Thus in this study we were trying to take advantage of new educational methods to use the capacities of cell phones to teach key points of Pediatrics.

The overall objective of the present study is to assess the impact of sending text message on training of pediatrics students.

METHODS

This study is a survey research. The research population was comprised of medical students in academic year of 2013-2014 at Mashhad University of Medical Science and in three different sections of pediatrics department. This study was approved by ethical committee of Mashhad University of Medical Science (Ethical code: 910439). Sample includes extern students (n = 85) and interns (n=37) of pediatrics department. The research was done after two month from beginning of the course in pediatric department. At the beginning of this study, the professors were asked to design a multiple choice question with its explanatory answer for all students (extern and intern) according to selected topics of courses which were taught during the period of externship and internship.

Subsequently, every day for 30 days, one text message in the form of multiple-choice question was sent for each extern student and intern. After reading the questions, students were to send the correct answers by text message. Because this test has only an educational and learning aspect and no point was calculated for it, there was no need to control the students on the way they answered. In this respect, it was possible that the students answer the questions by not only using their own knowledge but also looking over books or consultation with their peers, or even exchange their information with upper- year students. This was done to increase the cooperation of students, as the main and ultimate purpose of this test was learning not evaluation of students' knowledge.

After students send their answers, the correct answer with essential explanation and educational points were sent back to them and thus the required feedback was provided to them. In addition, at the end of the survey correct responses were collected and processed through the system and final feedback was given to the students.

To prevent technical problems in sending long messages, we tried to send summarized responses as much as possible. For this purpose, the maximum size of the delivered response was determined to be four short messages.

To evaluate students' attitudes toward the impact of sending

short message on their learning and also the usefulness of this method, a researcher-designed questionnaire was used at the end of the course. In order to assess the validity of questionnaire, content validity was used and the reliability was assessed with Cronbach alpha coefficient of 0.80. Score weight of questions was based on the Likert scale in the range of five scales (totally inappropriate, poor, average, good and very good). So the score of 1 indicates the minimum of interest and the score of 5 determines the maximum of interest and the cut-off score number was 3. As the assessment of participants' opinions was based on 5-degree scale of Likert and 3 questions were included in this survey, the sum of all degrees was equal to 15 (5×3) and after dividing by the number of degrees (5 degrees), the score of 3 was determined as the cutoff point.

Data were analyzed using SPSS16. Data analysis was performed in two levels of descriptive statistics (mean and standard deviation (SD)) and inferential statistics (One-Sample and independent t-test) and the level of significance of 0.5 was considered.

RESULTS

Of the 122 questionnaires distributed, 105 questionnaires were completed and collected (the rate of return was equal to 0.86). The mean and standard deviation scores of students and interns ' attitudes toward sending short message are shown in tables 1 and 2.

In order to compare views of extern students and interns regarding the plan of sending text message with the cut-off point of 3, one-sample t-test was used. Tables 1 and 2 show that in all variables, there was no significant difference between the means and the intended cut of point and medical students of pediatrics department believe that this project is in good condition.

As table 1 and 2 show, the value of $t = 0.089$ at the level of $\alpha = 0.5$ is not significant, so it can be deduced that there is no significant difference between the attitude of extern students and interns towards the project of sending text message.

DISCUSSION

Nowadays the traditional methods of teaching and learning have lost their effectiveness with emerging technology and new methods. Therefore, to keep pace with the changing environment around us, we have to look for new ways and methods of knowledge transfer and learning. New educational technologies (such as web and mobile phone) can provide large volumes of information and knowledge to learners and overcome the limitations of time and space. If the technology become richer, teaching and learning occurs more easily and in a shorter time. This creates a situation where learning occurs faster, easier, better and more sustainable.

Effective integration of technology is achieved when students are able to select technology tools to help them obtaining timely information, analyze and synthesize the information, and present it professionally.

The use of cell phones as a mobile technology tool in order to help the learning process can be very effective. While students enjoy technology freely, educators can focus on the learning process. Mobile technology can be used to increase the access to authentic and valid educational materials in every time and place (7).

As the findings of the research showed, medical students believed that the project of sending short messages was an efficient way of improving educational system and they also noted the positive impact of this plan on their learning. Therefore, due to the efficiency and usefulness of this plan they were agreed to continue this project. The findings of this study are consistent with the results of similar studies. In other studies the positive effects of mobile phone technology in learning has been shown (8-9).

Mcconatha, et al. showed in their study that the use of mobile learning can make a positive and useful difference in the outcome performance and can increase the knowledge of students (10).

The results of Cato study showed that mobile learning; develop literacy and numerical skills (11). Sarani and Ayati in

Table 1. Results of the one-sample t-test on students' attitudes toward the project of short message sending			
Variable	**The mean and standard deviation**	**t**	**Sig**
Educational performance	4.40±0.69	17.38	0.00
Impact on extern students learning	4.30±0.77	14.68	0.00
Attitude towards the project of sending short message	4.62±0.56	29.97	0.00

Table 2. Results of the one-sample t-test on the attitude of interns toward short message system			
Variable	**The mean and standard deviation**	**t**	**Sig**
Educational performance	4.53±0.62	13.35	0.00
Impact on interns learning	4.26±0.78	8.83	0.00
Attitude towards the project of sending short message	4.56±0.56	15.9	0.00

their survey titled as "The impact of mobile phones on the motivation and attitudes of students in teaching English" found that education through mobile phone have a positive effect on intensity of motivation, interest and attitude of English language students (4).

Lu in his study indicated that mobile group scores were significantly better than the paper group and the information gained by interview showed that generally students had positive attitudes towards mobile vocabulary learning and they are eager to continue learning vocabulary with the aid of mobile (12).

In another study by Kumar et al, result showed that 72.2% of participants considered learning with the help of mobile phone as a new opportunity and 66.2% of them believed that this method has an effective feedback. 73% of students stated that this method of learning has time and place flexibility and it is broad-base. Finally, the progress of students who were trained through this method was greater than other students (13).

In another study, Vavoula et al indicated that what personal computer can provide, a mobile phone also can do it. Interaction and enthusiasm, communication, collaboration and cooperation were identified as the advantages of mobile learning in this study (14). In addition, Young in his study found that mobile learning activities can be seen to play apart in individual education and especially suitable for learning activities out of classroom (15).

In the study by Power and Shrestha, they considered central learning approach of mobile phone and they confirmed that using mobile phone in educational system leads to improvement of language teaching and learning. By applying this method in educational system the teacher-centered approach changes to student-centered approach. Such approaches link the mobile phone technology to the cultural theories which support active learning (16).

Due to the rapid advances in science and technology and the vast amount of information in the age of communication and time limitation in the present world, the use of prompt methods of training with the high-speed feedback is very helpful in educational system. Using Cell phone technology in education with respect to its public access and high rate of data transfer was recognized as a valuable way of education and it has high efficiency.

The use of mobile technology can enhance the quality of education in the younger generation, reduce social costs, develop inclusive education in all parts of the country, and enforce educational justice. Finally, the optimal use of time can be brought with this technology.

Looking at the results of this study recommended that educational administers and policymakers should considered mobile phone as an educational technology that has potential advantages and professors should take advantage of new methods of learning especially mobile phone technology along with the use of traditional methods of learning in their classes. If professors paying attention to this issue, they have this chance to improve the effectiveness of their training and students learning.

Continuous expansion of educational systems based on mobile learning is an undeniable necessity in the face of new developments today. This may be used in strategic planning which accordingly guide the society in a knowledge-based direction.

ACKNOWLEDGEMENT

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