

EFFECT OF SENSITISATION OF UNDERGRADUATE STUDENTS USING M-LEARNING (MOBILE LEARNING) TECHNIQUES FOR BEDSIDE CLINICS

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ABSTRACT

BACKGROUND

In medical education, there are different types of teaching-learning methods. Various methods are utilised for transfer of knowledge to students. There has been an evolution in the teaching-learning methods due to the development in the technologies used for dissipation of knowledge. The advent of e-learning has created a new vista in the methods of teaching. Among this, mobile learning has become an important tool. Because of its ease of use and attractiveness, mobiles are very popular with the students.

The aim of the study is to study the effectiveness of sensitisation on undergraduate students using m-learning techniques for the bedside clinics.

MATERIALS AND METHODS

36 students of 8th semester (batches of 6 students for 3 months) posted in the Department of Obstetrics and Gynaecology were divided into two groups. One group was sensitised on the previous day by sending the module on the topic using the mobile application 'WhatsApp.' The students of this group were requested not to share the information with the other group till the study is over. The topic was taught the next day as a bedside clinic. The other group is taught directly without prior sensitisation. A post test was conducted on both groups related to the topic that was taught. The control group was later provided the topic module through their WhatsApp. Feedback questionnaires were given to both groups. The scores were analysed by unpaired t-test and Mann-Whitney U test.

RESULTS

The sensitised group had better post test scores and feedback scores ($P < .001$). There was improved learning ability and enhanced interest in topic by arousing attentiveness and active participation in the process of learning.

CONCLUSION

Mobile learning is an effective method for improving the cognitive domain and arousing the interest in the subject.

KEYWORDS

E-Learning, Mobile Learning, Sensitisation.

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BACKGROUND

In medical education, there are different types of teaching-learning methods. Different methods are suited for different teaching situations.

Educational technologies can be used to modify the teaching methods. The integration of e-learning into undergraduate, graduate and continuing medical education has a significant impact on the delivery and performance of medical education. The development of e-learning is not intended to replace the classroom or personal computer

based (e-learning) learning content, but to strengthen and harmonise overall learning strategy.¹

The evolution of learning paradigm from traditional classroom-based learning and electronic learning had brought out the new learning paradigm based on mobile devices, which is known as m-learning.² It is a new learning method with the use of mobile, handheld electronic devices and wireless technologies.³

Liang Ting⁴ stated that there are various mobile communication mechanisms that support m-learning such as voice communication, access of learning portal on the internet and learning through SMS. This clearly shows that m-learning could be interactive with the convergence of audio, web and mobile technologies in one package.

M-learning will be a successful trend currently and in the future because of several factors.⁵ One important factor is that the mobile devices are inexpensive compared to PC. Besides that, the devices are mobile, durable and convenient for the students on the go and lastly, the familiarity among

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younger users makes them an attractive mechanism for incorporating m-learning into the curriculum.

Pedagogical is a learning model that focuses on teachers who control the learning process.⁶ According to Keough,⁷ a new learning philosophy, which is called MObigogy that integrates pedagogy and andragogy should be adapted to m-learning environment. This is because, m-learning is no longer being controlled by teachers fully in the classroom, but also makes it possible for learners to learn anything that they want to learn at any time and at any places even though outside the school area.⁸

Mobile learning offers many new opportunities to work with learners. In the clinics, most of the students come unprepared for the class in spite of giving the schedule earlier. There is a time limit for the teachers to discuss the clinical cases. The main concept in clinics is to reach a diagnosis and to discuss the options in management. The other important details like anatomy, changes in normal physiology or pharmacology cannot be taught in the scheduled time. Students will not pay much attention to these aspects. Hence, in order to have a total discussion of the case, prior sensitisation via the mobile application 'WhatsApp', appears a good method. In this era of e-learning, the students will be more comfortable with this type of teaching-learning tool.

With the development of m-learning environment, one will be possible to learn everywhere at any time. A student who is on a holiday could still read the lecture notes and doing the exercises using his or her mobile devices.⁸ Mobile technology is increasingly being used by clinicians to access up-to-date information for patient care. These offer learning opportunities in the clinical setting for medical students.⁹

OBJECTIVE OF STUDY

To study the effectiveness of sensitisation of undergraduate students using m-learning techniques for the bedside clinics by-

1. Comparing the test scores of the group who were sensitised (experimental) and the group, which was not sensitised (control).
2. Comparing the method of clinical bedside teaching with and without prior sensitisation using a self-rated feedback questionnaire.

OBSERVATIONS AND RESULTS

	Group				Total	
	Control		Experimental			
	Count	%	Count	%	Count	%
Male	6	33.3	8	44.4	14	38.9
Female	12	66.7	10	55.6	22	61.1
Total	18	100.0	18	100.0	36	100.0
Table 1. Gender Wise Distribution of Study Subjects						

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Chi square=0.468, $p>0.05$.

MATERIALS AND METHODS

The study design is an interventional study. The period of study was for three months from July 2015 to September 2015. The study was conducted in the Department of Obstetrics and Gynaecology, Government Medical College, Kottayam. The sample size was 36 students. The study tools included post-test, mobile application 'WhatsApp' and feedback questionnaire.

Eighth semester MBBS students posted in the Department of Obstetrics and Gynaecology for one month were divided into two groups of six. Three such groups from the successive batches were taken for the study over a period of three months.

One group was sensitised the previous day through the mobile application 'WhatsApp' on the topic to be taught the subsequent day (for example; Anatomy, Physiology, etc. related to the topic) by sending the topic module, which was made earlier. They were then taught the next day in the clinics. The students of this group were requested not to share the information with the other group till the study is over.

The other group was taught directly without prior sensitisation.

A post test was conducted on both groups related to the topic that was taught. The post-test consisted of fill in the blanks and one word answers. The control group was later provided the topic module through their WhatsApp.

Feedback questionnaires were given to both groups.

Inclusion Criteria

Students with WhatsApp application in their mobiles.

Exclusion Criteria

Students absent on the day of the clinics.

There was no ethical concern as the control groups were provided with the learning material.

Data Analysis

Post test results are assessed by unpaired t-test.

The feedback questionnaire consists of 10 statements with participant being asked to indicate the extent to which he/she agrees with every single statement by choosing one of the 4 possible options among 'always, seldom, sometimes, not at all'. Each of the 4 possible responses is given a score of 1 to 4 so that higher scores indicate better feedbacks. Feedback is assessed by Mann-Whitney U test.

Residence	Group				Total	
	Control		Experimental			
	Count	%	Count	%	Count	%
Hostel	17	94.4	12	66.7	29	80.6
Day Scholar	1	5.6	6	33.3	7	19.4
Total	18	100.0	18	100.0	36	100.0
Table 2. Distribution of Study Sample According to Place of Residence on Residence						

Table 2. Distribution of Study Sample According to Place of Residence on Residence

Chi square=2.84, $p>.05$.

The mean feedback score in the control and experimental group were 26.3 and 35 and the median scores were 26 and 36, respectively. The difference in the 2 groups were statistically significant.

Group	N	Median	Z	Significance
Control	18	26		
Experimental	18	36	4.03	$P < .001$
Total	36			

Table 3. Comparison of Feedback Score Among Two Groups

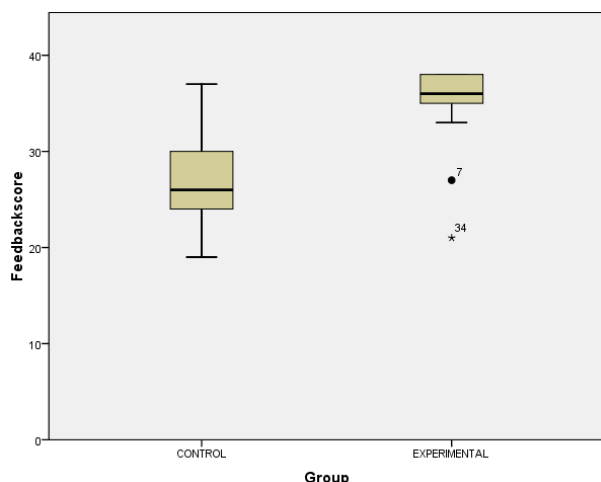


Figure 1. Box-Plot Diagram

The mean post test score in the control and experimental group were 5.63 and 7.86 and the median scores were 6 and 7.88, respectively. The difference in the 2 groups were statistically significant.

Group	N	Median	Z	Significance
Control	18	6.0	4.8	$P < .001$
Experimental	18	7.88		
Total	36			

Table 4. Comparison of Post Test Score Among the Two Groups

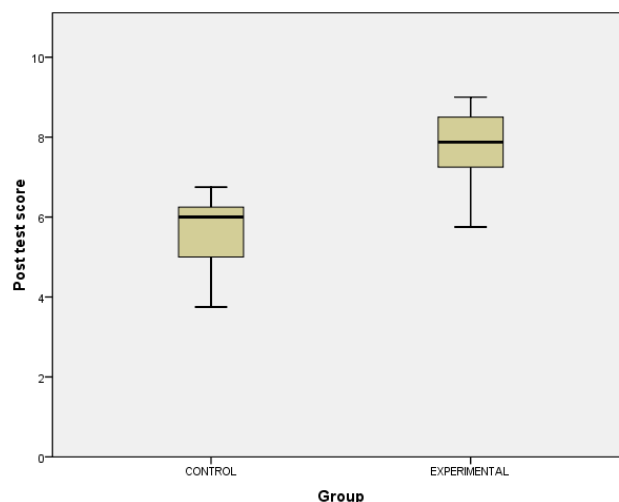


Figure 2. Box-Plot Diagram

Sex	Group	Median	Z	Significance
Male	Control	5.38	3.11	$P < .001$
	Experimental	8.25		
Female	Control	6.0		
	Experimental	7.38	3.4	$P < .001$

Table 5. Post Test Score Based on Gender was Statistically Significant in the Two Groups

Sex	Group	Median	Z	Significance
Male	Control	25.5	2.2	$P < .01$
	Experimental	35.5		
Female	Control	28.0		
	Experimental	37.5	3.6	$P < .001$

Table 6. Feedback Score Based on Gender was Statistically Significant between the Two Groups

DISCUSSION

The mean post test scores of the control and experimental group were 5.63 and 7.86, respectively. The difference clearly shows that prior sensitisation of the students improves their learning ability and the interest in the topic. Hence, there was a dramatic influence on the cognitive domain. The results are similar to a study by Kapil Loomba and Pooja Loomba.¹⁰ They found that m-learning being the recent technological innovation in classroom situations will help teaching-learning experiences in a productive manner.

The mean feedback score in the control and experimental group were 26.3 and 35, respectively. The difference clearly points out that mobile learning arouses the students' attentiveness, interest in the subject and active participation in the process of learning. The scores also showed that the students felt that they can recapitulate and reproduce the topic taught to the friends and also during the exams.¹¹

A study by Bethany S Davies and Jethin Rafique et al⁹ showed similar results. Feedback from students reveals high levels of satisfaction with mobiles, which enables them to access up-to-date information when and where they need it and learn more efficiently.

A comparison was done based on the gender. The results showed that prior sensitisation had better post test scores irrespective of their gender (Male - control: experimental=5.38: 8.25 and Females - control: experimental=6.0: 7.38). The feedback scores also showed a similar outcome (Male - control-experimental=25.5: 35.5 and Females - control-experimental=28: 37.5).

Another comparison was done based on the place of residence. The results showed that prior sensitisation had better post test scores in those staying in hostel (control: experimental=6: 7.6). Their feedback scores were also comparable (control: experimental=26: 37). The post-test and feedback scores of day scholar was not assessed as there was only one subject.

Hence, the inference from the above results shows that prior sensitisation of the students has a great positive impact on their cognitive domain and their outlook towards the teaching-learning method and interest in the subject. This is irrespective of their gender or place of residence.

The limitations for the use of mobile learning has been stated in a study by Barker, Krull and Mallinson.¹² The challenges of implementing m-learning are device limitations, issues on instructional, training, safety, security, and maintenance and the implementation cost.

The cost of the technologies and infrastructures in implementing m-learning environment without any doubt will be very high. The cost of the mobile devices itself still being considered as expensive. Hence, the barriers that need to be taken into account include screen size, cost, limited memory and battery life.¹¹

Limitations of the Study

This study is undertaken with a small sample size. Further studies involving a large population may highlight the importance of mobile learning.

CONCLUSION

Prior sensitisation of the MBBS undergraduates using m-learning application 'WhatsApp' for bedside clinics has been found to improve their cognitive domain. This method also has a positive impact on their outlook towards studies and thereby enhancing their interest in the subject.

Implication

Education has evolved from a material-based process where the instructor (teacher) focused on presenting information to students, to a student (learner) centered process where students are able to learn at their own pace. In this era of technological extravaganza in the field of teaching in medical education, the use of mobile and its various applications for sensitisation favours this.

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