The effect of video embed in lectures in improving the clinical skills in neurology for fourth year students in Faculty of Medicine in University of Tabuk: a case-control study

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ABSTRACT

Objectives: In this research, we investigate a pedagogical teaching method for clinical skills in neurology. Methods: A case-control study conducted at the Medical College, University of Tabuk, Saudi Arabia. Seventy-two fourth year medical students (2014/2015) were enrolled with 66 control subjects (2013/2014). Video lectures on clinical neurological signs were embedded in the group study curriculum after signing a written informed consent, then an Objective Structured Clinical Examination Test (OSCE) was conducted to evaluate the students after the course together with a structured questionnaire on the benefits of students, satisfaction, and deep learning. The t-test was used to compare the two groups, a P-value of < 0.05 was considered significant. Results: Out of 138 fourth year medical students their ages were 22.47 years, A high statistical differences were evident between the study and control groups regarding the overall score, examinations maneuvers, and professional behavior P-value <0.001. No significant difference was found relating to the identification of signs. Ninety-four% of the fourth year medical students benefited from the video embedded in the lectures, 90% were satisfied with lectures, while 84% stated that video learning leads to deep learning. Conclusion: The video learning improved outcomes in (OSCE) examinations, the majority of the student found that video learning was beneficial, and they were satisfied with it.

Keywords: Video, clinical skills, Students, Tabuk, Saudi Arabia

INTRODUCTION

A crucial role of medical education is to build students competency in basic clinical skills, most of the Medical Colleges adopt Objective Structured Clinical Examination (OSCE) to evaluate students who also spend a considerable amount of time in self-studying the clinical signs (Duvivier et al.; 2012). Teaching and learning of the clinical skills have historically occurred in real patient context. However, with the increasing number of students and relatives reduction in the number of patients, video learning has become a standard mode of educational delivery (Jang and Kim, 2014). The dramatic advances in technology in the last decades have also altered the expectation of students, such that most expect at least part of their university...
education to encompass some form of the new technologies.

There is a growing concern for improving teaching and learning, the core clinical skills as a fundamental part of the licensing examinations, reforming clinical skills in the curriculum of the Medical Colleges is a great challenge because a lot of resources is required (Jang and Kim; 2014).

Researchers showed the effectiveness of video learning in clinical education, multi-media are very efficient through its instruction. Furthermore, educational videos help with the capitalization of moving images for teaching specialized clinical skills as well as procedures requiring skilled techniques (Mayer, 2010; McMahon et al., 2006).

The video is an effective teaching and learning tool as it can stimulate the specific elements of a task that students must possess. Teachers must know sources of relevant videos, select useful video segments, apply various strategies for incorporating video triggers into the overall educational process, refine the message, overcome technological obstacles, and comply with copyrights laws. (Hurtubise et al., 2013).

The outcomes of videos lectures in medical education and skills training is a matter of controversy; some studies showed that it improve learner satisfaction and acceptance, and also lead to robust learning because it links the audio and visual together to provide a multisensory experience for the student.(5) Donkor; 2011; Mishra et al., 2002; Orientale et al., 2008; Zhang et al., 2012). On the other side, some studies found that the benefits for students are minimum, out of 149 streaming videos distributed to the students, the use was limited to significantly by small number of students (McNulty et al., 2009).

In the light of this controversy and the lack of researchers on how to make efficient use of them and to integrate into Medical school curriculum (Jang and Kim, 2014). Thus we conducted this research to assess video learning incorporation in the teaching of the basic clinical skills among medical students in the Faculty of Medicine, Tabuk, Saudi Arabia.

Subjects and Methods

This case-control study conducted among the fourth year medical students, University of Tabuk, Kingdom of Saudi Arabia during the year 2014/2015.

All students of the fourth year at the University of Tabuk in clinical skills module (MED 401) in 2013/2014 (No=66) and 2014/2015 (No=72) participated in the study after obtaining written informed consent and the right to withdraw at any time, confidentiality was guaranteed and confirmation given to the students that participation will not affect their summative results but no incentive was provided to the students for participation, both groups represent equal cohort group, the video lectures were embedded in the 2014/2015 curriculum with the 2013/2014 acted as control group.

Both groups were almost similar in sex distribution as there are pre-determined seats for males and females students.

Video scenarios demonstrating a wide variety of neurological signs including six areas of neurology, mainly in movement and gait disorders, Epilepsy and seizures disorders, speech disorders, abnormal reflexes, coordination and meningeal irritation were incorporated into neurology power point presentation lectures. These short segments of videos demonstrated signs that medical students and residents expect to see in patients during their training. Sixty-three videos without copyright were collected from trusted universities, journals, and medical associations.

In present study the incorporated segment of video were limited to positive clinical finding in examination particular disease situation, the length ranged from few seconds to a couple of minutes, this segment used as needed in the presentation to explain the positive clinical sign, this approach changed these lectures prepared from pure oral lecture that depends on more instructor verbal skills than on their notes or audiovisual support to an exemplary lecture in which the content are organized according to a set of objectives, and use media effectively.

Data collection and output measurement

Data collection depends on two instruments; first an objective structured clinical examination test station (OSCE test) which was designed by the researcher, it includes both standardized patients and real patients for the signs which were incorporated in the lectures, with particular assessment sheet showing total marks and subdivision of all skills need to be mastered by students (Epstein et al., 2007). Second; A structured questionnaire and interview at the end of the clinical skills module to measure the student's satisfaction, extent and depth of competence transfer to the students.

All the students responded to the structured questionnaire, for selected group the questionnaire consist of three items, on four points Likert scale includes benefits, satisfaction, and depth of learning acquired by the video learning.

Statistical analysis

The Statistical Package for Social Sciences (SPSS) was used for the data analysis, the chi-square test was applied compare the study and control groups, the data
Table 1. Comparison between 2014/2015 and 2013/2014 students performance

<table>
<thead>
<tr>
<th>Character</th>
<th>2014/2015 n=72</th>
<th>2013/2014 n=66</th>
<th>P-value</th>
<th>95%/CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Examination maneuver</td>
<td>15.47±4.59</td>
<td>23.15±4.76</td>
<td>0.000</td>
<td>1.12</td>
</tr>
<tr>
<td>Identifications of signs</td>
<td>19.64±6.1</td>
<td>19.52±4.36</td>
<td>0.923</td>
<td>1.28</td>
</tr>
<tr>
<td>Professional behavior</td>
<td>16.28±5.31</td>
<td>22.94±4.60</td>
<td>0.000</td>
<td>1.20</td>
</tr>
<tr>
<td>Total marks</td>
<td>51.39±14.38</td>
<td>65.61±13.23</td>
<td>0.000</td>
<td>3.33</td>
</tr>
</tbody>
</table>

Figure 1. Student's benefits from video embed in lectures curriculum

Figure 2. Student's satisfaction from video embed in lectures curriculum

were presented as percentages or mean± sd and a P-value of < 0.05 considered significant.

RESULTS

They were 138 fourth year medical students 66 in the 2013/2014 class (control group) and 72 in the 2014/2015 class (study group), their mean ages ranged from 22-24 years with an average of 22.47 years, 45%, and 48% were males in 2013/2014 and 2014/2015 respectively, the mean GPA was 3.75 for the 2013/2014, and 3.8 for the 4014/2015 group.

Table 1 depicted the comparison between 2013/2014 regarding the examination results in which: The 2013/2014 recorded 23.15±4.76 regarding test maneuvers vs. 15.47±4.59 for the 2014/2015 students with high significant statistical difference P-value=0.000, no significant statistical difference between the two groups relating to the identification of the clinical signs 19.64±6.1 vs. 19.52±4.36 for the control and the study group respectively P=0.923. The 2013/2014 group recorded 16.28±5.31 vs. 22.94±4.60 for the 2014/2015 group with high significant statistical difference P-value=0.000. It is interesting to note that the student with the video learning overall score was higher than those without 65.61±13.23 vs. 51.39±14.38 with high significant statistical difference P-value=0.000.

The current data showed that 94% of the fourth year medical students benefited from the video embedded in
DISCUSSION

The present study showed that the students have a positive perception of video lectures and that the video learning increases their depth of learning in line with the previous literature, our data indicated that video learning could be a fruitful venture in medical education. The video lectures meet the need of the medical students and could be integrated into the curriculum of medical colleges to make more practical use, in addition to the traditional way of teaching the clinical skills (Jang and Kim; 2014).

The present data concluded an improvement in the overall score, professionalism, and the student's techniques during the OSCE examination in accordance with (Strowd et al., 2015) who showed students improvement in clinical reasoning exam after the incorporation of a video-based curriculum.

Despite the effectiveness of video learning the limited resources are significant barriers to its proper integration in the curriculum of medical schools, this can be overcome by the collaboration between the colleges (Harden, 2013) by sharing the available resources in an efficient, effective way to support the students learning of the clinical skills.

There is an increasing concern to implement interactive tools- i.e., social network- in the educational environment because live streaming of surgical demonstration are more famous, and the educational videos are published in peer-reviewed journals (Looi et al., 2010).

Videos can be used to teach many areas in clinical teaching of neurology: this includes description and localization of findings, differential diagnosis, evaluation, management and counseling. In this study the incorporated segment of video into the lectures were limited to positive clinical finding in examination specified disease situation, short segment of video demonstrate clinical sign is incorporated the length is ranging from few seconds to couple of minutes, this part used as needed in the presentation to explain the positive clinical sign, this approach changes these lectures prepared from pure Oral lecture that depends more on instructor verbal skills than on their notes or audiovisual support to an exemplary lecture in which the content are organized according to a set of objectives, and use media effectively. In addition the recent advance in the electronic, fascination and popularity of the new young generations to the recent advance in technologies and availability of the computers, laptops, tablets and smartphone make it easy to store, retrieve and revise the videos based instruction materials, this also reduce the controversy in both text and teacher approach toward physical examination technique and ease the student tension and confusion caused by diversity of approaches.

CONCLUSION

A significant improvement in fourth-year medical student performance on the clinical skills in neurology occurred after implementing video embed in lectures curriculum, the main areas of improvement are total marks, poor performance, the performance of examination maneuvers and professional behavior.

The results presented here may facilitate improvements in the clinical neurology teaching and improve the outcome of students toward the neurology subject and reduce neurophobia.

Study limitations

The study was conducted at a single Medical College so
that generalization cannot be insured, also we compare the study group with the control, but we did not use a multivariate regression analysis. Further larger mult-center study are needed for the better understanding of factors affecting the student’s performance on OSCE examinations.

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