Monitoring by undergraduate students: a new proposal for monitoring students in distance learning courses for public health system and its impact on the adhesion

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Abstract

One of the great challenges facing distance education is recognized as the adhesion of students to courses. In this article we analyze the reflection on the adhesion of a new strategy for monitoring students, the introduction of monitors, undergraduate students in Medicine, in a distance learning course in electrocardiography for training physicians of UBS of Belo Horizonte. Objectives: To evaluate, in an online course of EKG for training "in job" of physicians of the municipal health network, the impact on the adhesion, the monitoring inclusion of students by monitors. Methods: We evaluated the approval rate that reflects adherence in five consecutive sub groups, correlating it with progressive actions of stimulus promoted by the monitors. Results: From 569 enrolled, 374 students participated in the course effectively, being approved 69.25% of them. The approval rate increased progressively in direct proportion to the increase in interventions made by the monitors in telephone contacts, email and forums. Conclusion: The effectiveness of the work developed by the monitoring on the adhesion highlighted the importance of human contact in this type of education, an apparent paradox. This strategy has brought benefits both for monitors and for the students of the course, as well as lower operating costs compared to the formal tutoring.

Keywords: *Telemedicine; Distance Education; Electrocardiography; Medical Education.*

Resumen

Tutoría realizada por alumnos de cursos de grado: una nueva propuesta de monitoreo de los alumnos de cursos a distancia en la red pública de salud y su impacto sobre la retención

Uno de los grandes desafíos que se enfrenta la educación a distancia es reconocida como la adhesión de los estudiantes a los cursos. En este artículo se analiza la reflexión sobre la adhesión de una nueva estrategia para el seguimiento de los estudiantes, la introducción de monitoreo, estudiantes de grado en medicina, en un curso de aprendizaje a distancia en electrocardiografía para la formación de los médicos de UBS de Belo Horizonte. Objetivos: Evaluar, en un curso a distancia de ECG para la capacitación "en el trabajo" de los médicos de la red municipal de salud, el impacto de la adhesión, el seguimiento de la inclusión de los alumnos por los monitores. Métodos: Se evaluó el porcentaje de aprobados que refleja la adherencia en cinco subclases consecutivos, en correlación con las acciones progressistas de estimulación promovidas por los monitores. Resultados: De los 569 inscritos, 374 han participado efectivamente en el curso y se aprobaron 69,25%. La tasa de aprobación aumentó progresivamente en proporción directa con el aumento de las intervenciones realizadas por los monitores en los contactos telefónicos, correo electrónico y foros. Conclusión: La eficacia del trabajo desarrollado por los monitores acerca de la adhesión evidenció la importancia del contacto humano en este tipo de educación, una aparente paradoja. Esta estrategia ha generado beneficios tanto para los monitores y los alumnos del curso, así como menores costos de operación en comparación con la tutoría formal.

Palabras-clave: *Telemedicina; Educación a Distancia; Electrocardiografía; Educación Médica.*

Resumo

Monitoria realizada por alunos de graduação: uma nova proposta de monitoramento de alunos em cursos a distância para a rede pública de saúde e seu impacto sobre a adesão

Um dos grandes desafios enfrentados pela educação a distância é, reconhecidamente, a adesão dos alunos aos cursos. Neste artigo analisa-se o reflexo, sobre a adesão, de uma nova estratégia para acompanhamento dos alunos, a introdução de monitores, estudantes de graduação em Medicina, em um curso a distância em eletrocardiografia para treinamento de médicos das UBS de Belo Horizonte. Objetivos: Avaliar, em um curso a distância de ECG para treinamento "in job" de médicos da rede municipal de saúde, o impacto, sobre a adesão, da inserção de acompanhamento dos alunos por monitores. Métodos: Avaliou-se a taxa de aprovação, que reflete a adesão, em cinco sub turmas consecutivas, correlacionando-a com ações progressivas de estímulo promovidas pelos monitores. Resultados: Dos 569 inscritos, participaram efetivamente do curso 374, sendo aprovados 69,25% destes. A taxa de aprovação cresceu progressivamente, em proporção direta com o aumento das intervenções feitas pelos monitores em contatos por telefone, email e fóruns. Conclusão: A eficácia do trabalho desenvolvido pela monitoria sobre a adesão evidenciou a importância do contato humano nessa modalidade de ensino, um aparente paradoxo. Essa estratégia trouxe benefícios tanto para os monitores quanto para os alunos do curso, além de custo operacional menor, comparado à tutoria formal.

Palavras-chave: *Telemedicina; Educação a Distância; Eletrocardiografia; Educação Médica.*

INTRODUCTION

The Distance Learning (DL), teaching / learning modality in expansion nowadays, has an important social role, since it widens access to education, contributes to the training and updating of professionals and helps in the training in new occupations and professions. A challenge of this educational model is the high dropout rate of students. It is considered evasion the abandonment of the course, including those who after having enrolled, never presented or expressed themselves in any way for colleagues and facilitators of the course at any time.[1] There are several factors that lead students to give up a distance learning course, including fatigue after a day of work, the lack of interest in continuing studies, the student's personal profile, their motivation, their degree of technological integration and so on. Certainly the human factor – loneliness expressed by the student on the computer screen – it is a real challenge and one of the strongest dropout causes.

Studies show that fully distance courses have expected dropout of at least 30% and may be even higher depending on the degree of complexity of the course, the profile and the degree of technological integration of the target audience, the access to computers. In order to try to reduce this dropout rate, strategies for student motivation and inclusion of attractive resources in the classes have been developed in several education centers of distance learning around the world.

The Distance Learning Course on Electrocardiography was the result of partnership between the Ministry of Health, the Federal University of Minas Gerais and the Municipal Secretary of Health of Belo Horizonte. Having a course load of 30 hours / class, three of these on-site classes, the course was offered to doctors of basic health units (BHU) in the municipality without financial cost to the students enrolled, as a professional training opportunity within the environment and time work. The course was developed in the Technology Center on Health of the Faculty of Medicine of UFMG (Cetes), and richly illustrated using graphic animation resources, organic 3D modeling, creation and insertion of characters and videos in order to reduce the amount of texts, allow greater visualization of the process and facilitate the understanding of the concepts in electrocardiography. The course was made available to every physician in his own internet working environment in the moodle learning platform and could be accessed upon login and individual passwords.

OBJECTIVES

The present study aims at evaluating the impact of the inclusion of graduate monitors in Medicine for monitoring the professionals enrolled in the electrocardiography distance learning course about the adhesion to the course. As analysis parameters, the total number of students registered, professionals entrance to the classes available in the learning platform and the fulfilment of self-evaluative activities inserted at the end of each class, the student attendance record in regular classes and the number of successful students were used.

METHOD

The basic distance course of interpreting the electrocardiogram was prepared to offer 11 classes, three of them

face to face, giving the course the character of blended learning. As a way of humanizing the teaching, every class was preceded by a video recorded by the professor responsible for the subject. In this video it was emphasized the importance of the topic and the professor introduced himself to the student, who had the opportunity to meet the professional who prepared the teaching material. In addition to the introductory videos, organic simulations in 3D modeling associated with graphic animation were also produced. Interactive characters were created and introduced to give greater lightness to the content.

The course was offered over two years, to all employees of (BHU) of Belo Horizonte Town Hall, divided into five sub-groups. Each sub-group was composed of about 100 students and the offer period of the online course for each sub-group was 4 months.

The analysis of adhesion obeyed the following criteria: students who never accessed the course platform or did only once, without performing any activity within the virtual learning environment were considered students excluded by extrinsic factors to the course. Among these factors, the literature cites low familiarity with technology, lack of real interest in the particular subject, personal profile not suitable for distance learning and so on. Effectively enrolled students were considered those who accessed the online teaching platform more than once.

It was used as a basis of calculation:
- adhesion percentage in relation to the total of effectively enrolled students;
- adhesion percentage in relation to the total of effectively enrolled students in each sub group.

The successful course completion of the student was conditional on meeting the minimum of 70% of the proposed activities, computed by the participation / attendance in regular classes, access to the online classes offered and the fulfilment of self-evaluative exercises available after each class. At the end of the course it was distributed in each group, an evaluation questionnaire of the course, which aimed at pointing out the positive and negative aspects and allowing analysis of strategies to improve the adhesion of students.

In relation to the successful course completion, it was considered as a basis for analysis:
- the percentage of approval in relation to the total of effectively enrolled students;
- the percentage of approval in relation to the total of effectively enrolled students in each sub group.

Throughout the course it was introduced as a strategy for increasing adhesion, the support of the participants by monitors selected among undergraduate students of the Faculty of Medicine of UFMG. The work of the monitors was built using several strategies, the most important being the continuous monitoring of all students enrolled in the course. The monitors had free access to students through the use of resources inserted in the Moodle platform where the course was delivered. Using the own platform tools, the monitors could track each student, making sure which online classes were being accessed and which exercises were being sent. Once they have obtained this data, it was made the students approach through personal email in order to encourage those who were not participating effectively in the course and giving positive reinforcement for those who were up-to-date with the activities. It was noted, however, that some students even after receiving the e-mails, remained infrequent. So it was used a second strategy, the telephone contact. This contact was initially personal (monitor-student), and on a third stage, with the managers of UBS, directly responsible for the professional. In these calls, the goal was to detect administrative and technical problems that could be affecting the adhesion of the professionals, as local technical nature difficulties, internet access to internet and verification of the effective release of the hourly professional load during the working day to attend the course. As far as possible, they sought to solve the pending issues observed, answer questions concerning the course and encourage access and the fulfilment of activities. The contact with the manager aimed at informing him about the situation of the student in the course and request his support to the professional through the release of hours during the working day, so that the course activities could be performed by the registered professional.

Another strategy used by the monitoring was the ongoing monitoring of the students´ entry into the Forum, seeking greater interaction (process of humanization) and also clearing doubts of the students. The Forum was created within the course platform so that students could express their doubts or problems, and also be answered promptly by the monitors. The theoretical doubts were immediately sent to the professor coordinator, who answered directly to the student via platform or personal email. Issues and technical questions were also solved immediately with the help of the technical staff. As this was an open space to all, the students could also help themselves by discussing questions and sharing information.

It was also requested the active participation of monitors in regular classes to maximize the interpersonal contact and increase students' confidence in monitoring.

RESULTS

The first group (T1) had the registration of 101 professionals. Among these ones, 53 attended the course effectively, 37 completed the course successfully (69.81%). In the second group (T2) there were 83 students enrolled and 49 students began the course effectively. Among these ones, 35 completed the course successfully (71.42%). From the third class (T3), students were supervised by monitors as well as other strategies were used to try to reduce the dropout rate. In this group, there were 69 students enrolled, 44 students attended the course effectively and 81.81% of them completed the course successfully. In the fourth group (T4), there were 161 students enrolled, 111 students began the course effectively, and 83 completed the course successfully (74.77%). In this group, they kept the monitoring activities and included additional strategies to improve the adhesion to the course, such as inclusion of videoconferencing for the fulfilment of online activities. In the fifth group (T5), the same strategies adopted in the previous group were kept. 155 students were enrolled, 117 attended the course effectively. 71 students (60.68%) completed the course successfully. In total, there were 569 students enrolled; 374 attended the course effectively (65.72%) and 69.25% completed the course successfully. The data regarding class attendance and successful completion of the course in each group are summarized in Table 1.

It was observed an absolute and relative increase in the adhesion rate of students to the course, when analyzed under the optical frequency of the classes, most of which occurred in the monitoring period (3rd, 4th and 5th groups). When the adhesion was analyzed from the perspective of approval, it was also noted a progressive increase of students who completed the course successfully until the fifth and last group. The decrease in the approval rate observed in the fifth group in relation to the others was mentioned on a questionnaire filled out by the participants themselves and they stated it was due to the fact that the course coincided with the vacation of the professionals, which reduced the time available for study. The evolution of the adhesion rate (percentage of students who attended the course effectively) and the evolution of the approval rate can be best seen in Figures 1 and 2, respectively.

It is observed in Graph 1, a progressive increase in the number of active students in the electrocardiography online course, in proportionality with the increasing of monitors together with the professionals enrolled.

In Graph 2, there is a progressive increase in the approval, until the group 4, of active students enrolled in the electrocardiography online course.

Table 1 - Performance evaluation of students in 5 groups of electrocardiography online course for medical professionals of the Municipal Health System of Belo Horizonte

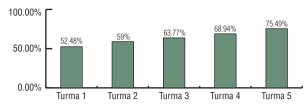|	Group 1	Group 2	Group 3	Group 4	Group 5
Total of students enrolled	101 students	83 students	69 students	161 students	155 students
Number of students who attended the course effectively	53 students	49 students	44 students	111 students	117 students
Percentage of students who attended the course effectively:	52.48%	59%	63.77%	68.94%	75.49%
Analysis of adhesion	Local of reference	Increase of 6.52% in the adhesion rate	Increase of 11.29% in the adhesion rate	Increase of 16.46% in the adhesion rate	Increase of 23.01% in the adhesion rate
Total number of students who completed the course successfully:	37 students	35 students	33 students	83 students	71 students
Percentage of students´ approval who began the course effectively	69.81%	71.42%	81.81%	74.77%	60.68%
Analysis of approval	Local of reference	Increase of 1.61% in the approval rate	Increase of 12% in the approval rate	Increase of 4.96% in the approval rate	Reduction of 9.13% in the approval rate

Figure 1 - Percentage of medical professionals who attended the ECG online course effectively in relation to the total number of students enrolled.
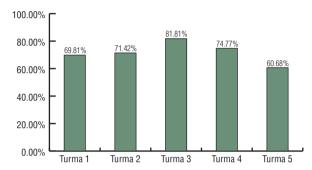

Figure 2 - Percentage of students approval who attended the ECG online course effectively.

DISCUSSION

The online basic course of interpreting the electrocardiogram is a valuable contribution within the university extension line, an affluent area of activity of universities that allows the community to enjoy the knowledge and expertise of different academic professionals, which is reflected in better condition assistance. It is necessary, however, to adopt strategies to try to increase the adhesion to this type of course, trying to give greater assistance to students, thus promoting greater interest and commitment of the participants. It was with this objective that it was introduced the undergraduate monitoring in this course.

It was observed during the course, progressive increase in the adhesion rate as more stimulus strategies and greater personal contact of monitors with students were adopted. Thus, it was possible to prove that in this type of education, dialogue is very important and should be encouraged, as it fosters students learning and leads to a considerable decrease in the dropout rate of them.

The monitoring brought benefits both for monitors and for students. For monitors, it represented the contact with the technology and the methodology of distance education, the opportunity to access to the public health system professionals, besides the introduction to the knowledge of the rudiments of electrocardiography. The increase in

students' adhesion from the introduction of monitoring activities showed the importance of human contact in the midst of a universe that would initially be guided only by technology. This appreciation was also observed from the point of view of the students, according to which monitoring has brought security to deal with the shortcomings of technology training, greater freedom to expose the doubts (because they have monitors still in the graduation course), greater effectiveness in clearing doubts regarding the content favored by fast communication between student / monitor and monitor / professor.

According to the literature, courses in which there is no clearly recognized added value, such as possibility of better remuneration and progression in career or are offered no financial cost to participants, such as the online course described in this article, seem to have a lower adhesion rate than courses that have these characteristics. Considering this aspect, the monitoring can be an effective tool to reduce evasion in distance training courses, complementing the formal tutoring, but with lower operating costs. The reduction of the operating cost of tracking / monitoring of students in distance learning courses may become more feasible to carry out training of the public health system professionals with a view to the large number of potential students and the possibility of lower allocation of public resources for training these professionals.

CONCLUSION

The experience of creating a new process of monitoring distance learning courses for physicians of public network based on the monitoring of the participants carried out by undergraduate students in medicine, aggregate at formal tutoring has shown that this methodology can be effective in decreasing the students dropout in distance learning courses in the health area. It also proved to be interesting from the financial point of view, reducing the total cost of the course without loss of teaching quality. Additional gains were seen coming from the most important humanization of the teaching / learning process mediated continuously by monitors, properly guided by a small number of tutors. This course, by the complexity and difficulty of the subject – electrocardiography- added to the participation of a significant number of physicians and significant approval rate, it is a great example of the possibilities offered by a distance learning course monitored properly and continuously. It is a good object of re-

search and reflection, particularly in a reality such as Latin America, where the running costs are important barriers to offering distance learning courses. This methodology of monitoring students offers to other institutions new training opportunities of their physicians in a very important component in primary health care: the correct interpretation of the electrocardiogram.

The course also demonstrates a unique experience in a very integrated process between the health care network and the university, with the latter contributing to the process of training physicians that work in distant realities, without needing to move, an aspect of great relevance in the reality of Latin America.

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