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ACEITAÇÃO PELOS ENFERMEIROS DA UTILIZAÇÃO DE UM MASSIVE OPEN ONLINE COURSE EM CONTEXTO DE FORMAÇÃO CONTÍNUA

*ACCEPTANCE BY NURSES OF THE USE OF A MASSIVE OPEN ONLINE
COURSE IN A CONTEXT OF CONTINUOUS TRAINING*

*ACEPTACIÓN POR LOS ENFERMEROS DE LA UTILIZACIÓN DE UN MASSIVE OPEN
ONLINE COURSE EN CONTEXTO DE FORMACIÓN CONTINUA*

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RESUMO

Introdução: A evolução científica e tecnológica exige dos enfermeiros uma atualização permanente. Esta atualização concretiza-se através da formação contínua e da aprendizagem ao longo da vida, as quais enfrentam alguns obstáculos como a necessidade de conciliação com a vida pessoal e familiar.

O recurso a cursos massivos, online e assíncronos possibilita aos enfermeiros o acesso a conteúdos atuais e direcionados às suas necessidades, potenciando autonomia e gestão da aprendizagem.

Com este estudo pretendíamos avaliar a facilidade de utilização, utilidade percebida e intenção para a utilização de um *Massive Open Online Course* (MOOC) na formação contínua pelos Enfermeiros.

Metodologia: Estudo observacional, exploratório e descritivo com recurso a uma técnica de amostragem não probabilística de conveniência. O estudo decorreu no Departamento de Medicina Interna de um Hospital Central do Norte de Portugal.

Resultados: Neste estudo participaram 141 enfermeiros. Os resultados revelaram uma elevada facilidade de utilização e utilidade percebidas do programa formativo, assim como a intenção dos enfermeiros para a utilização futura de um MOOC.

Discussão: A utilidade, facilidade e intenção percebidas, são suportadas pela qualidade percebida nos conteúdos, pela adequação às necessidades percebidas, pela utilização de estratégias pedagógicas ativas como a integração da simulação clínica virtual, e pela acessibilidade percebida aos conteúdos formativos.

Conclusão: A utilização de um MOOC, disponibilizado a partir das Tecnologias de Informação e Comunicação, tem um elevado potencial de aceitação e utilização na formação contínua em enfermagem, contribuindo não só para a segurança e qualidade dos cuidados, mas também para uma adequada gestão da vida pessoal e profissional dos enfermeiros.

Descritores: Educação Continuada; Educação a Distância; Enfermeiras e Enfermeiros; Autogestão; Doença Pulmonar Obstrutiva Crônica.

ABSTRACT

Introduction: Scientific and technological developments require continuous nurses' updating. This update would be achieved through continuous training and lifelong learning, which face some obstacles such as the need for reconciliation with personal and family life.

The use of massive, online and asynchronous courses allows nurses access to current and targeted content to their needs, enhancing autonomy and learning management.

With this study, we aim to assess the ease of use, perceived utility and intention for using a *Massive Open Online Course* (MOOC) in continuous nursing training.

Methodology: Observational, exploratory and descriptive study using a non-probabilistic convenience sample. The study took place in the Department of Internal Medicine of a Central Hospital in the North of Portugal.

Results: 141 nurses participated in this study. The results showed high perceived user-friendliness and utility of the learning program, and the nurses' intention for using a MOOC in the future.

Discussion: The perceived usefulness, ease and intention are supported by the perceived quality in the contents, by the adequacy to perceived needs, using active pedagogical strategies such as the integration of virtual clinical simulation, and the perceived accessibility to training content.

Conclusion: The use of a MOOC, made available from Information and Communication Technologies, has a high potential for acceptance and use in continuing nursing training, contributing not only to the safety and quality of care, but also for an adequate management of nurses' personal and professional lives.

Descriptors: Education, Continuing; Education, Distance; Nurses; Self-Management; Pulmonary Disease, Chronic Obstructive.

RESUMEN

Introducción: Los avances científicos y tecnológicos exigen que los enfermeros se mantengan permanentemente actualizados. Esta actualización se concretaría a través de la formación continua y del aprendizaje permanente, que afrontan algunos obstáculos como la necesidad de conciliación con la vida personal y familiar.

El recurso a cursos masivos, online y asíncronos posibilita a los enfermeros el acceso a contenidos actuales y dirigidos a sus necesidades, potenciando autonomía y gestión del aprendizaje.

Con este estudio pretendíamos evaluar la facilidad de uso, utilidad percibida e intención para la utilización de un *Massive Open Online Course* (MOOC) en la formación continua de los enfermeros.

Metodología: Estudio observacional, exploratorio y descriptivo, recurriendo a una muestra de conveniencia no probabilística. El estudio tuvo lugar en el Departamento de Medicina Interna de un Hospital Central del Norte de Portugal.

Resultados: En este estudio participaron 141 enfermeros. Los resultados mostraron un gran nivel de percepción de la facilidad de uso y la utilidad del curso de formación, así como la intención de los enfermeros de usar un MOOC más tarde.

Discusión: La utilidad, facilidad e intención percibidas, son soportadas por la calidad percibida en los contenidos, por la adecuación a las necesidades percibidas, por la utilización de estrategias pedagógicas activas como la integración de la simulación clínica virtual, y por la accesibilidad percibida a los contenidos formativos.

Conclusión: El uso de un MOOC, que se ofrece a partir de las tecnologías de la información y la comunicación, tiene un alto potencial de aceptación y uso en la formación continuada de enfermería, contribuyendo no solo a la seguridad y calidad de la atención, pero también para una adecuada gestión de la vida personal y profesional de los enfermeros.

Descriptores: Educación Continua; Educación a Distancia; Enfermeras y Enfermeros; Automanejo; Enfermedad Pulmonar Obstructiva Crónica.

INTRODUCTION

Currently, healthcare professionals, nurses particularly, are challenged to be instructed to respond to a healthcare context in which developments in diagnosis, treatment and new challenges that people living with a chronic illness face assume high volatility. Volatility that results from the massive production of new evidence and the consequent need to update guidelines and clinical guidance standards and their translation into practice by health professionals. Access to training content, updated, certified and targeted to the needs of health professionals have special relevance in the third decade of the 21st century.

Nurses' engagement in different training strategies, not only on an individual initiative, but also on the initiative of health institutions, plays a decisive role. Therefore, in organizational terms, in-service and/or institutional training becomes fundamental as a strategy for promoting and guaranteeing the quality and safety of the care provided.

The National Health Plan (NHP) 2030 identifies as one of its strategic objectives the strengthening of access to quality healthcare, emphasizing that this care must be targeted at the individual's problem, based on current evidence and guided by good quality practices and security⁽¹⁾. In this context, although the initial training of nurses is fundamental, lifelong training is crucial in ensuring technical and scientific updating⁽²⁾.

Thus, the available Information and Communication Technologies (ICT), digital literacy and ease of access to communication and information devices by nurses, promote new ways, opportunities and intentions for them to access information for their technical-scientific updating, and guaranteeing the quality and safety of healthcare. However, in today's society, barriers persist in accessing lifelong learning, such

as the need to reconcile family and professional life and the associated economic costs⁽³⁾.

To minimize barriers and inequalities in access to lifelong learning, the World Health Organization identified digital health intervention as a resource to be implemented at a global level. A digital health intervention is defined as the specific use of digital technology to achieve health objectives. Digital education encompasses computer-based offline and online education (e-learning), open and massive online courses, serious games and gamification, augmented reality environments, virtual reality, virtual simulations of clinical cases, the psychomotor skills training and mobile learning (m-learning), among others⁽⁴⁾.

E-learning, electronic learning or web-based learning, is seen as a complement to traditional lifelong learning models, encompassing the knowledge provided through digital technologies. E-learning is considered an element that promotes access for health professionals to lifelong training⁽⁵⁾. In the different modalities of e-learning, and technologies available for its implementation, the Massive Open Online Course (MOOC) emerged in the last decade as a resource for the provision of content, in asynchronous and distance digital format.

This type of course, provided by Higher Education institutions, certified and integrated into the in-service training programs of health institutions, emerges as a possibility to contribute to access to continuous training for health professionals, helping to overcome some of the barriers in access to lifelong learning.

The concept of MOOC is based on the definition of several concepts such as electronic learning (e-learning), mass communication, knowledge sharing and openness⁽⁶⁾. Consisting of quality content and personalized according to its intended purpose, the MOOC is aimed at a large target audience, which in face-to-face teaching is most of the time not possible. These courses emerged more than 20 years ago and were distinguished by "their disruptive method of providing content", implementing innovative pedagogy and tools⁽⁷⁾.

In recent years, the frequency of MOOC has grown exponentially. At a global level, not including China, in 2021, around 220 million enrolled in online courses, a number that constitutes double the number enrolled in 2020⁽⁸⁾.

The personal and professional advantages and gains for individuals who attend a MOOC have been described, ranging from the impact on global learning and knowledge, to the development of skills, attitudes, confidence and commitment⁽⁹⁾.

The use of ICT and these courses in particular can constitute strategic resources to optimize nurses' access to training content that ensures lifelong

training and consequently as one of the institutional strategies to guarantee the quality and safety of nursing care.

Chronic Obstructive Pulmonary Disease (COPD) has been one of the main causes of death, hospitalization, morbidity with reduced functionality and quality of life ⁽¹⁰⁾. Given the prevalence of this disease, and the high functional impact on the person, the family and the health and social security systems ⁽¹¹⁾, it is necessary to make the state of the art accessible to nurses so that they become more meaningful to people living with COPD ⁽¹²⁾. The provision of training content through a MOOC course, developed and certified by leading Higher Education institutions, with the collaboration of National and International Experts, supported by the best evidence, can help to overcome some of the main barriers identified in access to training throughout life ⁽¹³⁾.

Ecure-COPD is a training program developed by the Escola Superior de Enfermagem do Porto, and its purpose is to develop nurses' skills to help people with COPD self-manage the disease. This training program, its contents and strategies may have special relevance in the exercise of the specific skills of Specialist Nurses in Rehabilitation Nursing, as well as in the exercise of their common skills as Specialist Nurses in the areas of care management and learning development of professionals. This program consists of 12 training modules. Each module is made up of different lessons, supported by state-of-the-art video and text syntheses. Lessons are presented by national experts from different subject areas. At the end of each module, each participant is evaluated. Completion of the training program and issuance of certification implies an overall assessment greater than or equal to 50%. In total, this training program includes 59 lessons. The 12 modules are complemented by a module in which the participant can train

clinical decision-making through the use of a virtual patient simulator. The training program was accessible through the NAU platform and by invitation. This program has undergone a validation process, demonstrating its relevance and technical-scientific and pedagogical adequacy ⁽¹³⁾. However, little is known about the acceptance of the use of a MOOC in lifelong learning by nurses.

Therefore, with this study we intended to evaluate the ease of use, perceived usefulness and intention for using a MOOC in ongoing training by Nurses.

METHODOLOGY

Observational, exploratory, descriptive study that uses a non-probabilistic convenience sampling technique. All nurses from an Internal Medicine department at a Central Hospital in the North of Portugal who voluntarily agreed to participate in the study were considered eligible.

To collect data, after completing the training program, we used a questionnaire ⁽¹³⁾ that assesses acceptance of the use of information and communication technologies. This questionnaire consists of 12 items (chart 1), whose possible answers vary on a Likert scale between "1 – worst possible opinion" and "5 – best possible opinion". This instrument was developed based on the Technology Acceptance Model ⁽¹⁴⁾ and the determinants of perceived ease of use ⁽¹⁵⁾, based on experience and publications using this methodology ^(12,13,16).

In the area of technology and education ⁽¹⁷⁾, the technology acceptance model (TAM) is a theoretical model that predicts the acceptance of the use of technology by users. This model suggests the existence of relationships between ease of use, perceived usefulness and behavioral intention to use the technology.

Chart 1 – Items from the questionnaire assessing acceptance of the use of information and communication technologies

1	Regarding the course (ECare-COPD), how do you rate its ease of use?
2	Regarding the course (ECare-COPD), how do you rate its usefulness for your training?
3	What are your intentions for using this type of course in the future?
4	How relevant is this course to your learning/training?
5	Did this course facilitate your learning?
6	Do you consider this course a contribution to your learning/training?

7	How do you evaluate the quality of the course content?
8	How do you assess the suitability of the course to your learning/training needs?
9	How do you quantify your learning/training?
10	Overall how do you evaluate the course?
11	Do you consider this course a differentiating contribution to the education of nurses?
12	Would you recommend this course to another nurse/specialist nurse?

ANALYSIS AND DATA TREATMENT

Statistical analysis was performed using the software: IBM SPSS Amos v.29, IBM SPSS Statistics v. 29. We used descriptive statistics and inferential analysis to analyze the different variables under study. In inferential analysis, depending on the nature of the hypotheses, we used the T Student test and the Pearson test. In analyzing the internal consistency of the data collection instruments, we used Exploratory Factor Analysis (AFE) and Cronbach's Alpha. The results are reported following APA standards, presenting the magnitude measures of Cohen's d effect (0.2 low; 0.5 medium and 0.8 high) and p values <.05 considered significant.

ETHICAL ISSUES

The study obtained a favorable opinion from the Board of Directors, Ethics Committee, Clinical Research Service, Nursing Directorate and Training Department, of the institution where the data were collected (document with reference: 2021.010(007-CE)).

RESULTS

141 nurses from a medicine department at a Hospital in the North of Portugal participated in this study, corresponding to 73.05% (N=193) of the total number of nurses in the department. Of the participants, 79.4% (n=112) were female. These nurses had an average age of 33.29 years old (SD±8.22;

Med.=31.50; Min.=24 and Max.=58), an average professional experience as a Nurse of 10.15 years (SD±7.11; Med.= 8; Min.=1 and Max.=37), and an average experience of 6.64 years in the medicine department of this Hospital in the North of Portugal (SD±6.24; Med.= 4 ; Min.=0 and Max.=26).

In this sample, 83.7% (n=118) of nurses were licensed and 13.5% (n=19) had master's in nursing. Regarding the professional category, 75.2% (n=106) hold the category of nurse, 21.3% (n=30) of Specialist Nurse, 1.4% (n=2) of Nurse Manager.

ASSESSMENT OF EASE OF USE, PERCEIVED USEFULNESS AND INTENTION TO USE THE PEDAGOGICAL STRATEGY IN CONTINUING EDUCATION

The data proved to be suitable for carrying out exploratory factor analysis (EFA) (KMO=0.965 and Bartlett's sphericity test<.001). AFE revealed the one-dimensionality of the instrument. The only identified factor explains 70.05% of the data variability.

When evaluating the internal consistency of the instrument, we found a Cronbach's Alpha value of 0.965 for the 12 items with an item-total correlation between 0.739 and 0.887.

In table 1 we present the descriptive values of the 12 items of the instrument for evaluating ease of use, perceived usefulness and intention to use the pedagogical strategy in continuing education, as well as the overall average score.

Table 1 – Descriptive analysis of the 12 items of the instrument for evaluating ease of use, perceived usefulness and intention to use the pedagogical strategy in continuous training

	N	Média	Mediana	Desvio padrão	Assimetria	Curtose	Mín	Máx
1-Relativamente ao curso (ECare-COPD) como qualifica a facilidade de utilização	141	4,46	5,00	0,64	-0,94	0,62	2,00	5,00

	N	Média	Mediana	Desvio padrão	Assimetria	Curtose	Mín	Máx
2-Relativamente ao curso (ECare-COPD) como qualifica a utilidade para a sua formação	141	4,43	4,00	0,64	-0,82	0,48	2,00	5,00
3-Qual a sua intenção para utilizar este tipo de curso no futuro	141	4,50	5,00	0,59	-0,72	-0,44	3,00	5,00
4-Qual a relevância deste curso na sua aprendizagem/ formação	141	4,49	5,00	0,60	-0,74	-0,40	3,00	5,00
5-Este curso foi facilitador da sua aprendizagem	141	4,55	5,00	0,59	-1,13	1,39	2,00	5,00
6-Considera este curso um contributo na sua aprendizagem/ formação	141	4,40	4,00	0,65	-0,96	1,18	2,00	5,00
7-Como avalia a qualidade do conteúdo do curso	141	4,45	5,00	0,61	-0,66	-0,50	3,00	5,00
8-Como avalia a adequação do curso às necessidades da sua aprendizagem/ formação	141	4,27	4,00	0,57	-0,07	-0,47	3,00	5,00
9-Como quantifica a sua aprendizagem/ formação	141	4,44	4,00	0,58	-0,66	0,78	2,00	5,00
10-Globalmente como avalia o curso	141	4,48	5,00	0,60	-0,91	0,88	2,00	5,00
11-Considera este curso um contributo diferenciador na educação dos estudantes/ enfermeiros	141	4,55	5,00	0,61	-1,21	1,33	2,00	5,00
12-Recomendava este curso a outro enfermeiro / enfermeiro especialista	141	4,30	4,00	0,67	-0,58	-0,08	2,00	5,00
Valor médio TAM	141	4,44	4,58	0,52	-0,92	1,02	2,33	5,00

The item data reveal average values per item above 4.27 (on a 5-point Likert scale) and an overall TAM average of 4.44, a fact that highlights the high perceived ease and usefulness of the pedagogical strategy used in ongoing training, as well as a high perception of intention to use this pedagogical strategy of continuous training in the future (M=4.50). The data reveal that the participants evaluate the quality of the course very positively, the contribution to training, and consider it to be a differentiating contribution to education (M=4.55), and that they recommended it to other nurses (M=4.3).

The inferential analysis did not allow identifying differences with statistical significance regarding sociodemographic and professional variables.

DISCUSSION

This study shows that nurses perceive a MOOC as a useful strategy in their training and lifelong learning, constituting a facilitating and distinct contribution to the training process.

Regarding ease of use, usefulness, intention to use this type of training strategy in the future, and its overall quality, the majority of nurses evaluated these characteristics positively (attributing a score of 4 or 5, on a scale of 1 to 5), with 89%, 94%, 94% and 98%, respectively. This fact points to the need for this pedagogical strategy, supported by a MOOC, to also be based on high quality standards of the content provided, as well as its alignment with the updating needs perceived by Nurses.

Although continuous training is crucial in the development of nurses' skills, providing quality to the interventions or care they provide⁽¹⁸⁾, this has faced some obstacles, due to the reduction in human resources, high turnover and increased workload in health institutions⁽¹³⁾. Therefore, it is essential that these professionals, as well as the institutions where they work, resort to and use innovative platforms that integrate ICT in their professional development, as a strategy to overcome some of the barriers identified by health professionals and nurses in particular to get involved. A fact confirmed by the possibility of training and certifying a large number of nurses in the short period of time of this study.

A MOOC can be available on these platforms, safeguarding access on a large scale, without restrictions on time or geographic location⁽⁷⁾, a fact that optimizes the reconciliation of the functioning of services, the personal, family and professional lives of Nurses.

It should be noted that the ease of use of a given technology directly influences its use⁽¹⁹⁾, which indicates that the use of technology is not a hindering element in the implementation of the use of a MOOC in the ongoing training of Nurses.

In this way, we can see the relevance perceived and attributed, by Nurses from a Medicine department, to the use of a MOOC as a pedagogical strategy in training. However, the fact that the study is limited to the domain of COPD self-management, in a specific institution and context, prevents the generalization of the results obtained, constituting a limitation of the study developed. It should be noted that the proposed strategy, in other areas of Nurses' action, may need to be complemented by simulation strategies in a service or laboratory context. The use of a MOOC by nurses allows access to essential content to ensure the updating of their knowledge⁽¹³⁾.

This training program, presented in MOOC format, had a dropout rate of 6.55%, lower than that described in previous studies^(13,20,21). The integration of virtual clinical simulation and the gamification component into the training program may have contributed to this, as this increases trainee satisfaction, reducing dropout rates⁽³⁾.

The characteristics of the MOOC Ecare-COPD, integrating multimedia resources (videos) and summary of the most recent evidence on COPD, contribute to the perception of the usefulness of the MOOC⁽²²⁾ and, to greater involvement in learning, which in turn contributes to increasing the intention to attend this type of course again⁽²³⁾. On the other hand, the low values of this dropout rate may also be related to the fact that the MOOC used is intended to develop nurses' skills in training self-management for patients with COPD, since when the MOOC is related to professional activity of participants, enrollment and completion rates are higher⁽²⁴⁾. When carrying out a MOOC is part of professional activity

and there is the possibility of issuing a certificate of attendance and completion of the MOOC, the probability of participants completing it increases⁽²⁵⁾.

Thus, the development and provision of a MOOC, supported by the best evidence and certified by Higher Education Institutions, can constitute a central strategy in the ongoing and lifelong training of Nurses and particularly in areas of specialization. In this particular, areas of specialization such as Rehabilitation Nursing, where the production and availability of evidence has been increasing, with a direct impact on the effectiveness, quality and safety of clinical practice, can benefit from the use of a MOOC to guarantee the accessibility of Nurses Specialist in Rehabilitation Nursing to technical-scientific updating.

CONCLUSION

This study contributes to a better understanding of the potential that information and communication technologies have to reduce the barriers perceived by nurses to engage in lifelong training, and in particular in-service training, promoting a response aimed at the needs of nurses and people with COPD.

The high level of acceptance by Nurses of the use of a MOOC in the context of continuous training, in this study, allows health care providers and Higher Education Institutions to base the decision on how to optimize access for Nurses and Rehabilitation Nurses to training content that makes an effective contribution to ensuring the quality and safety of care, enabling the reconciliation of nurses' personal, family and professional lives with the institutions' mission.

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Conceptualization: CDJ; MPP; PJM

Data treatment: CDJ; MPP; PJM

Formal analysis: CDJ; MPP; PJM

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