

EDUCATIONAL HYPERMEDIA ON PERIPHERAL VENIPUNCTURE: THE PERSPECTIVE OF STUDENTS OF NURSING*

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ABSTRACT: This descriptive qualitative study aimed to identify the opinion of students in relation to the use of educational hypermedia on Peripheral Venipuncture in the teaching of nursing. Interviews were held with 12 students of nursing from a public university, during the first semester of 2013. The interviews, through content analysis, allowed the identification of the nuclei of meaning and categorization, and gave rise to four categories: Influence of the hypermedia course on the learning, Educational technology as support for proximate teaching, Hypermedia's relationship with professional practice, and Difficulties in access. Hypermedia presented positive results, as the majority of the students reported that the material helped in the learning and led to autonomy and interactivity at the time of studying. However, some mentioned difficulty in accessing the hypermedia, mainly related to the server used. Thus, hypermedia was shown to be a valid tool for use, as it promoted learning and awoke the interest and curiosity of the students.

DESCRIPTORS: Information technology; Hypermedia; Nursing; Peripheral catheterization; Nursing students.

HIPERMÍDIA EDUCACIONAL SOBRE PUNÇÃO VENOSA PERIFÉRICA: PERSPECTIVA DE ACADÊMICOS DE ENFERMAGEM

RESUMO: Estudo descritivo, com abordagem qualitativa, com objetivo identificar a opinião de estudantes quanto à utilização de uma hipermissão educacional sobre Punção Venosa Periférica no ensino de enfermagem. Foram entrevistados 12 estudantes de enfermagem de uma universidade pública durante o primeiro semestre de 2013. As entrevistas permitiram a identificação dos núcleos de sentido e de categorização pela análise de conteúdo e originou quatro categorias: influência da hipermissão no aprendizado, tecnologia educacional como suporte ao ensino presencial, relação da hipermissão com a prática profissional e dificuldades de acesso. A hipermissão apresentou resultados positivos, pois a maioria dos acadêmicos relatou que o material ajudou na aprendizagem e gerou autonomia e interatividade no momento de estudar. Entretanto alguns referiram dificuldade de acesso a hipermissão relacionado principalmente ao servidor utilizado. Assim a hipermissão mostrou-se uma ferramenta válida para uso, uma vez que favoreceu o aprendizado e despertou o interesse e a curiosidade dos estudantes.

DESCRIPTORES: Tecnologia da informação; Hipermissão; Enfermagem; Cateterismo periférico; Estudantes de enfermagem.

HIPERMEDIA EDUCACIONAL SOBRE PUNCIÓN VENOSA PERIFÉRICA: PERSPECTIVA DE ACADÉMICOS DE ENFERMERÍA

RESUMEN: Estudio descriptivo, con abordaje cualitativo, cuyo objetivo fue identificar la opinión de estudiantes acerca de la utilización de una hipermedia educacional sobre Punción Venosa Periférica en la enseñanza de enfermería. Fueron entrevistados 12 estudiantes de enfermería de una universidad pública durante el primer semestre de 2013. Las entrevistas posibilitaron la identificación de los núcleos de sentido y de categorización por el análisis de contenido y resultaron en cuatro categorías: influencia de la hipermedia en el aprendizaje, tecnología educacional como soporte a la enseñanza presencial, relación de la hipermedia con la práctica profesional y dificultades de acceso. La hipermedia presentó resultados positivos, pues la mayoría de los académicos ha informado que el material ayudó en el aprendizaje y generó autonomía e interactividad en el momento de estudiar. Sin embargo, algunos apuntaron dificultad de acceso a hipermedia referente principalmente al servidor utilizado. Así, la hipermedia se mostró una herramienta válida para uso, una vez que ayudó en el aprendizaje y despertó el interés y la curiosidad de los estudiantes.

DESCRIPTORES: Tecnología de la información; Hipermedia; Enfermería; Cateterismo periférico; Estudiantes de enfermería.

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INTRODUCTION

The use of Information and Communication Technologies (ICT) in the educational field has brought significant changes in the interactions and in the interactivity in the process of teaching and learning. Due to this factor, there has been a large increase in the number of courses, both in proximate and distance learning, which are mediated through Virtual Learning Environments (VLE)⁽¹⁾.

The VLE may be defined as a computational system available on the Internet which is destined for supporting activities mediated through information and communication technologies, and which allows the process of teaching-learning through the pedagogical mediation between the students and the teacher. It is capable of integrating multiple media, languages and resources, and presents information in an organized way, as well as extending the interactions between the individuals and the object of knowledge, affording the socialization of experiences and productions⁽²⁾.

Thus, this technological revolution has produced a generation of students who are developing new ways of perceiving and learning, as they grew up in multimedia environments, with expectations and a world view which differ from previous generations. In this perspective, innovation in teaching methods and the creation of VLE appear as challenges for the teachers in the contemporary world⁽³⁾.

In parallel with this advance, teaching and research in the area of nursing have sought to adjust to the advances of technology in education⁽²⁾. Since 2000, a growing and important advance has occurred in the development of informatics in Nursing. Multiple themes have been addressed, reporting the development of competences, decision taking, the impact of the Internet, and the multiplicity of interventions in widely differing fields of work for nurses⁽⁴⁾.

New strategies for teaching and learning are being inserted in the ambit of Nursing, among them, methodologies which afford the student greater autonomy in the learning. Among the various educational resources, we highlight educational hypermedia, which allows the user to receive information through the computer and interpret it, allowing the process of construction

of knowledge to occur pleasantly, efficaciously, and interactively⁽⁵⁻⁶⁾.

Nevertheless, in spite of the technological advances in the area of Nursing, there are still some procedures – such as Peripheral Venipuncture (PV) – which caused the students anxiety and insecurity, which draws attention to the need to create new teaching strategies supporting the student in the exercising of her practice activities successfully and safely, bearing in mind that PV is a procedure undertaken routinely in the nursing team's practice activities.

In the light of this context, the use of hypermedia intermediated by the VLE provides a complementary element in training the student to undertake specific procedures safely, as it brings the student closer to the reality. This fact contributes to acquiring the knowledge necessary for managing to overcome insecurity in undertaking nursing procedures⁽⁷⁾.

Regarding these considerations, the undertaking of the present study is justified, due to the increase in the use of informatics in nursing teaching, bringing the student closer to the practical context in her area of work. It is worth emphasizing that the results of this study could contribute to improving the tools and technology existing in the area of Nursing, taking into consideration the students' opinions on the use of hypermedia, and the difficulties experienced in the VLE, allowing one to fill gaps present in the teaching, as well as to evaluate the teaching through Distance Learning (DL).

Therefore, this study's objective was to identify students' opinion regarding the use of educational hypermedia on PV in the teaching of Nursing.

METHOD

This is a descriptive study with a qualitative approach, undertaken during the first semester of 2013 in the Federal University of Ceará (UFC), with students from the sixth semester of the undergraduate nursing course.

The present study used educational hypermedia in the mode of a DL course for nursing students in the Nursing in the Process of Caring for the Adult II Course, as a voluntary complementary activity, with a course load of 16 hours/week.

The hypermedia course was made available

on the UFC SOLAR Platform, available at <http://solarpresencial.virtual.ufc.br/>. The choice of the Solar VLE as support for the hypermedia occurred due to it being open source, and also by the fact that the UFC uses this environment as support for its proximate teaching in various areas of teaching.

For the student to have access to the course, it is necessary to register in the VLE with the username and password made available to allow log in. Access to the environment was possible following the approval of the tutor/professor, following the user's request to enrol.

On the first page of the hypermedia site, the student had access to the lessons, organized in six modules, subdivided in topics, namely: Module 1: Introduction to peripheral venipuncture; Module 2: Anatomy of the venous network; Module 3: The procedure of peripheral venipuncture; Module 4: Local and systemic complications of PV; Module 5: Peripheral venipuncture in special patients; and Module 6: Non-conforming actions of PV.

Over the course of the lessons there are different tools, which allow interaction between the students; in the PV hypermedia, use was made of videos, photographs, hypertext, hyperlinks and exercises. This variety also makes it possible for these tools to become attractive as they are used by the students.

In order to identify the students' opinion regarding the use of the hypermedia course, some inclusion criteria were used, namely: to be officially enrolled on the Nursing in the Process of Caring for the Adult II Course, to have a basic understanding of computing (such as: switching the computer on and off, using the Internet, using the tools for printing and editing texts), being prepared to use the educational hypermedia course through the virtual environment, and to commit oneself to concluding the course within a two-week period, the time necessary for concluding and evaluating the hypermedia course. The exclusion criteria were: students who had already undertaken courses on PV, and those who did not finish the evaluation of the hypermedia course within an adequate timeframe.

The participants in the study were 12 nursing students, this number being conditioned to the criteria of saturation of the findings, which occurs when the information begins to be repeated or when the addition of new data, for submitting to

the processes of analysis, is minimal⁽⁸⁾.

Data was collected in a private room, in the University itself, in accordance with the participants' availability, and outside lesson times so that there would be no interruption of the students' participation in their curricular activities. In order to achieve the study objective, semistructured interviews were used as the data collection technique; thematic questions were addressed, such as the use of educational technologies for teaching in nursing and access to digital teaching materials, as well as the main limitations found in this type of mode of teaching. The interviews were recorded, with the students' authorization, and lasted between 20 and 60 minutes. They were transcribed in full.

After the interviewing of 12 of the 29 potential participants, the authors observed the absence of new information, and ascertained that data saturation had been achieved, leading us to finalize data collection. In order to preserve anonymity, the students were identified by the word Student, followed by a number which represented the order in which they had signed up to the study.

The analysis of the empirical data was undertaken by three researchers and took place in the following stages: pre-analysis; exploration of the material; and treatment of the results and interpretation, following guidance for content analysis⁽⁸⁾.

In accordance with Resolution 466/12, of the National Health Council, the project was submitted to the Research Ethics Committee of the UFC. It was approved under protocol N. 215/11. The students signed the terms of consent, and were guaranteed confidentiality regarding the information provided and the omission of their identities⁽⁹⁾.

RESULTS

The participants in this study were 12 nursing students, predominantly female (11 women and one man), and in the age range between 22 and 26 years old. All reported having easy access to the Internet at home, and at the University via wireless, in the I.T room, the library, and in the research groups.

Furthermore, all the students had access to

the Internet via their cell phones, and reported that this served as support in undertaking their course activities, as they preferred the Internet to manuals and books for resolving doubts and for studying content of the subjects on their course.

Based on this scenario, the process of analyzing the data allowed the identification of four categories: Influence of the hypermedia course on learning; Educational technology as support for proximate teaching; Hypermedia's relationship with professional practice; and Difficulties in access.

Influence of the hypermedia course on learning

The exchanging of information between students, through tools existing in the hypermedia course, such as forums and chat rooms, allows interactivity between the students and the tutor, as well as the sharing of doubts and the provision of feedback on the knowledge learned. It is possible to perceive this influence through the following accounts:

I learned about the material used in the procedure; when to use scalp or abbocath needles, as well as the indications for venipuncture [...]. (Student 2)

The anatomy [in relation to the best veins]. The advantages and disadvantages of each instrument. The types of complications which incorrect puncture can cause [...]. (Student 9)

The knowledge regarding the different possibilities of the technique, the anatomy of the vascular network, and the possible complications of incorrect venipuncture [...]. (Student 11)

Knowing the veins and their location better, reviewing the technique and the theory [...]. (Student 6)

In this regard, the hypermedia was shown to be favorable to acquiring knowledge, as the subjects of the study stated that the use of the VLE afforded improvement of their knowledge on PV, in relation to, for example, the anatomy of the venous network and the materials used in the nursing care, thus permitting the association of theory and practice.

Educational technology as support for proximate learning

The use of technologies in teaching can serve as support for training which extends outside the classroom, allowing the student to choose the ideal time for the learning herself. In addition, in the hypermedia course, the student has access to various interactive medias which facilitate the acquisition of knowledge, due to the numerous possibilities for learning. The accounts below describe this interaction:

What most attracted me to use the hypermedia course was the ease of having the lessons, and going through them outside the academic environment, at times convenient for me [...]. (Student 2)

There was some information which I had never heard people speak about, either in the laboratory classes or in the placements [...]. (Student 7)

The hypermedia may be observed as a flexible and pleasant environment for the studies, able to resolve doubts and promote new knowledge, contributing as a support tool for the content administered in the classroom.

Hypermedia's relationship with professional practice

The practice of peripheral venipuncture is one of the basic procedures for which the nursing team is responsible, and requires the professional to have technical and scientific knowledge of the issue. One can perceive through the discourses:

I found the subject to be of great importance for a future nursing professional, besides how it was presented to us [...]. (Student 4)

It's a very important tool for us students, as our university provides us with a differential in the teaching which will help us to be better qualified for the job market [...]. (Student 10)

I consider the subject to be extremely important

for professional practice, and intend to put myself down on other distance courses [...].
(Student 8)

The hypermedia course serves to help the student nurse in the performance of her activities in attending the patients, at the beginning of the hospital practice, as it facilitates the students' teaching-learning process in relation to memorizing the sequence of the technique, allowing access to didactic and interactive materials when the student wants, and reducing doubts resulting from the different ways of undertaking a same procedure. Moreover, during professional life, hypermedia is a tool for continuous learning, updating knowledge on the technique, thus promoting the professional's continuous education.

Difficulties in accessing the virtual environment

In this study, some participants reported difficulties accessing the hypermedia course, mainly related to the server used. Thus, one can perceive the need for guidance for the students for facilitating the access to the information, so as to allow the use of the tool in the most efficient way by the users.

I had difficulty in accessing the lessons using Google Chrome. When I changed search engine, I was able to access the hypermedia more easily and faster [...]. (Student 1)

I didn't know that the search engine influenced how you navigate the system, making access slower [...]. (Student 2)

At certain times I had difficulties accessing [the hypermedia course] due to the system not recognizing my password [...]. (Student 5)

Depending on the server which is used, the videos are slower to load [...]. (Student 9)

I found it annoying, because after registering, you have to wait for your access to the course to be authorized by the tutor [...]. (Student 11)

Thus, it is necessary to take special care so as to foresee the difficulties of the user or group in relation to the environment which will be used; the ease of navigating, accessibility and functionality makes the learning effective and understandable thus minimizing possible obstacles referent to the use of the VLE.

DISCUSSION

Among the different resources available for use in nursing education, technology is a means for improving the practice of the teaching and the nursing care, requiring critical analysis regarding the context in which the technology will be inserted, expressing the educational intention which permeates its use⁽⁶⁾.

The students' expectation, in relation to the insertion of educational technologies in the learning, is the possibility of accessing the information outside the university. The information is complete, mainly in relation to the practical application, with detailed videos available regarding undertaking the procedure.

Education in the area of nursing must cover the appropriate technical and scientific knowledge for undertaking activities such as PV(10). The knowledge regarding undertaking the appropriate techniques, the anatomy of the venous network, the materials to be used and their specific characteristics is essential for the procedure to be undertaken successfully.

The use of the hypermedia course made it possible to complement the theoretical content provided in the classroom, providing the students with additional illustrative materials regarding PV, with videos and complementary activities. This made a junction possible between the knowledge and the experience of the teacher in the academic environment, and the use of a virtual environment rich in tools for deepening knowledge of the techniques for undertaking the procedure.

The virtual environment awoke the students' interest, due to the ease of access to the knowledge in the VLE, besides the availability of the material in the virtual environment and the facilitated communication with the tutor responsible for the hypermedia course. It was possible to perceive the need for the development of similar hypermedia courses, addressing widely-

differing nursing techniques, with free and easy access for all university professionals, so as to provide continuing education for these.

The students mentioned the interaction with other students and with the tutor as an advantage of using the hypermedia course. One of the strengths of using VLE is the interactivity as a possibility for reflection and exchange in the construction of knowledge to be used by the mediator⁽¹⁰⁾.

In the context of Distance Learning (DL), the promotion of the interaction allowed new relationships with the knowledge, as, in the VLE, the student has the opportunity for making choices, and these can be mediated by the use of technological support and resources⁽¹⁾. The collective construction of knowledge, based on the principles of cooperative learning, and on the vision of the educator who seeks to pass on her experience and to monitor the trajectory of her colleagues and students, opening up new paths and possibilities⁽¹¹⁾.

The Chat room and Forum tools can be characterized as important communication channels which allow the students to debate important aspects present in the content of the hypermedia course. It is recommended that the work of the tutor in the forum should be dialogical, so that those doing the course should see this tool not simply as one more place for handing in tasks, but, rather, as a space for ongoing dialogue, for further questioning, and for contributions from other colleagues on specific questions or facts⁽³⁾.

One study undertaken in Rio de Janeiro with primary care nurses, which uses online teleconsultations in a distance continuous education program, showed positive results, as it translates the need for innovation in the educational environments for health professionals⁽⁹⁾.

In another study⁽¹²⁾ undertaken with student nurses, it was possible to observe that the same considered the video of the hypermedia course used in the research as relevant for clinical practice, demonstrating that the use of this type of didactic resource encourages the learning and has significant repercussions in the professional career. The hypermedia courses provide an environment with rapid access to the information in various formats, and the opportunity for free access to the knowledge.

With the advent of technology in nursing teaching and practice, there was a need for an adaptation in the pedagogical practices, which could allow a more dialectical movement of the triangulation of the teacher, student and object, in the perspective of the educator as a facilitator of the teaching-learning process⁽⁴⁾. Thus, the technologies must be used in the teaching-learning process, as they promote the interactive formation of the knowledge, as well as allowing a broader view of the subject, being presented as an individualized alternative for learning⁽¹³⁾.

DL allows the student to behave more actively, and to develop initiative, commitment, and responsibility in managing her activities and deadlines. The flexibility relating to time is one factor which contributes to this competency developing. The student comes to reflect in order to solve problems, is encouraged to research and to clarify doubts (the exchange occurs virtually and can even be done with colleagues, in forums) – and this virtual coexistence becomes enriching when there is the opportunity to participate actively in exchanging ideas and reflections, besides the opportunity to undertake face-to-face feedback with other colleagues, so as to articulate points inherent to the course content seen in the undergraduate course⁽¹⁴⁾.

In this context, hypermedia is a flexible and interactive learning environment, which provides the student with the opportunity to explore the content in accordance with her needs, from multiple perspectives⁽¹⁵⁾. This learning strategy places the student at the center of the educational process, as it confers upon her the autonomy to undertake her activities in accordance with her availability. This autonomy provided makes the students' individuality possible, in which each one can direct the learning towards the points needed, as well as to provide access to the lecturer and other students through the tools offered, this being confirmed in the presentation of the results following the use of the hypermedia course.

The use of a hypermedia course contributes to this new way of learning, as it uses a methodology through which the student studies on her own, according to her availability, making better use of the theoretical content and triggering a process which will be reflected in her professional life, which is to learn through taking on responsibilities⁽¹⁰⁻¹¹⁾. In this way, the student

constructs her knowledge based on reflection and questioning of the practice. The participation in the training process occurs actively, creatively and critically, in a continuous exercise in which she is capable of undertaking analysis, interpretation and synthesis of the object to be learned, also having commitment to her training⁽¹¹⁾.

One study undertaken in São Paulo, with student nurses enrolled in the first semester, evaluated the importance of inserting educational technologies in the teaching so as to complement the nurses' training. Some favorable points from the results are highlighted, such as: the possibility of obtaining information outside the classroom, greater communication of the students between themselves and with the professor, and the positive influence of the use of this resource in professional practice⁽¹⁶⁾.

The study's findings indicate the need to advise students regarding the properties of the software used, and to identify the difficulties before the learning process starts, so as to prevent possible problems in visualizing and saving digital material on the computer⁽¹²⁾.

The difficulties presented by the students of the UFC are similar to those found in a study undertaken in the Federal University of Rio Grande do Sul (UFRGS), which used digital educational objects constituted by a hypertext, educational games and simulation activities, geared towards students of the fourth semester of the undergraduate course in nursing; in this study, the students reported that the material had not been used as they would have liked, as they mentioned difficulty in installing the program and accessing the material⁽¹⁴⁾.

It stands out, therefore, that for the tool to be fully successful, VLE must provide adequate access and have educators and tutors who are motivated and updated. The access of the student, however, is fundamental, it being essential to be participative and active, to access the content, seek material besides the text proposed, and contribute with reflections for discussion^(13,17).

Finally, it is inferred that the student who makes use of the VLE is subject to the teaching-learning process mediated by technological and human resources, interacting with the environment in which he is, with the professor, with didactic material, and with the other students, thus promoting the learning. In addition to this, it

awakens the student's interest regarding the issue, provided by a specific virtual environment with tools for learning about the practice in detail. However, as it can already be perceived that the construction of knowledge does not occur autonomously, it permeates the field of social relationships, in which the person being educated can share the experiences she has acquired with the other students, based on collaborative learning⁽¹⁾.

The use of educational technologies requires the professionals to be involved, dedicated and prepared, in the search for improvement of the educational approach, of the decision-making processes, and of the quality of healthcare given to the population, in widely varying contexts, based on an appropriate informational structure. It is essential that the nurse should know how to critically evaluate the knowledge produced and the information communicated, and how these can effectively be applied, whether in education, in management, or in the provision of nursing care, as science is the basis of this investment⁽⁴⁾.

FINAL CONSIDERATIONS

Nursing has stood out as a profession of important proximity with the patient; in this regard, good preparation of the future professional in the context of the undergraduate studies, based on educational support geared towards qualified nursing care, is relevant. The practice of peripheral venipuncture is one of the basic procedures which are the responsibility of the nursing team, requiring the professional to have technical and scientific knowledge regarding the topic.

From this point of view, approaching the issue of PV through a technological support was shown to be a valid tool, as it was possible to identify some specific characteristics and good acceptance on the part of the student nurses. Thus, in the light of these findings, hypermedia will be added to the Nursing in the Process of Caring for the Adult II, as a tool which is complementary to the proximate teaching.

It was observed in this study that the student herself recognizes the demands of the job market, and that in order to become a good professional it is important to take advantage of all the initiatives offered on the nursing course, with educational hypermedia being a tool which promoted the

students' interest and curiosity.

As limitations of this study, emphasis is placed on the choice of the semistructured interview as the only data collection strategy, undertaken in only one meeting. It is suggested that future studies be undertaken so as to better understand the study object, such as observation of the students' activities in various practice settings (placements and laboratories), as well as of their performance in the lectures.

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