● **Original article**

NURSES' EXPERIENCE IN DISTANCE EDUCATION: AN OVERVIEW ON THE DIMENSIONS OF INTERACTION AND AUTONOMY

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ABSTRACT: This was a case study with a qualitative approach that aimed to analyze nurses' experience in the distance education modality focusing on the dimensions of interaction and autonomy. Semi-structured interviews were carried out with 13 nurses in a Higher Education Institution in Minas Gerais, from December 2014 to February 2015. Content Analysis was used as technique of analysis. It was found that interaction was made possible through the components of dialogue and structure. Dialogue took place mainly among students themselves and in the context of socialization and collaborative learning. Regarding structure, the study found the evidence of high structuring and control made possible by the maximization of the technological apparatus. In the dimension of autonomy learning took place through networking and in a collaborative way, enhanced by the following features: time/displacement flexibility; reduced costs; and the decision to search for improvement. This study found possibilities of advancing knowledge in Distance Education, though interaction and autonomy need to be maximized in these experiences.
DESCRIPTORS: Distance Education; Education in nursing; Information technology; Permanent education.

EXPERIÊNCIAS DE ENFERMEIROS NA EDUCAÇÃO A DISTÂNCIA: UM OLHAR SOBRE AS DIMENSÕES INTERAÇÃO E AUTONOMIA

RESUMO: Estudo de caso de abordagem qualitativa que buscou analisar as experiências de enfermeiros na modalidade a distância nas dimensões interação e autonomia. Realizaram-se entrevistas semiestruturadas com 13 enfermeiros de uma Instituição de Ensino Superior em Minas Gerais, entre dezembro de 2014 e fevereiro de 2015. Utilizou-se da Análise de Conteúdo como técnica de análise. Verificou-se que a interação foi destacada por meio dos componentes diálogo e estrutura. O diálogo aconteceu, predominantemente, entre os próprios estudantes e na perspectiva da socialização e do aprendizado colaborativo. Quanto à estrutura, constatou-se a concepção de alta estruturação e o controle favorecidos pela maximização do aparato tecnológico. Na dimensão autonomia, o aprendizado se deu em rede e de forma colaborativa, potencializados pelas características: flexibilidade de horários/tempo/deslocamento, redução de custos e a decisão pela busca do aprimoramento. Conclui-se que a enfermagem tem encontrado na Educação a Distância possibilidades de avanços no conhecimento, entretanto a interação e autonomia necessitam serem maximizadas nestas experiências.
DESCRITORES: Educação a distância; Educação em enfermagem; Tecnologia da informação; Educação permanente.

EXPERIENCIAS DE ENFERMEROS CON EDUCACIÓN A DISTANCIA: UNA VISIÓN SOBRE LAS DIMENSIONES INTERACCIÓN Y AUTONOMÍA

RESUMEN: Estudio de caso, abordaje cualitativo, buscando analizar experiencias de enfermeros en aprendizaje a distancia respecto de dimensiones interacción y autonomía. Se realizaron entrevistas semiestructuradas con 13 enfermeros de Institución de Enseñanza Superior de Minas Gerais, entre diciembre 2014 y febrero 2015. Se aplicó técnica de Análisis de Contenido. La interacción fue destacada por sus componentes diálogo y estructura. El diálogo se dio, fundamentalmente, entre los propios estudiantes, en perspectiva de socialización y aprendizaje colaborativo. Respecto a la estructura, se constató concepción de alta estructuración y de control, favorecidos por maximización del aparato tecnológico. En la dimensión autonomía, el aprendizaje se realizó en red, de manera colaborativa, potenciado por las características: flexibilidad de horarios/tiempo/desplazamiento, reducción de costos y decisión de búsqueda de mejoramiento. Se concluye en que la enfermería encuentra en la Educación a Distancia posibilidades de avances del conocimiento, en tanto interacción y autonomía sean maximizadas en la experiencia.
DESCRIPTORES: Educación a Distancia; Educación en Enfermería; Tecnología de la Información; Educación Continua.

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● **INTRODUCTION**

In the health context Distance Education (DE) has expanded the possibilities of permanent education for professionals, based on the dissemination and sharing of knowledge in and out of the workplace[1].

The field of nursing has also used DE resources for the permanent education of professionals in this area. This involves developing graduate, refresher and improvement courses in topics specific to nursing and teleconsulting among others[2-5].

Despite the increasing popularity of DE in the nursing context, these experiences should be evaluated by the experience of the actors engaged in the study, placing them at the heart of the evaluation process[6]. The evaluation of experiences in DE showed aspects that highlight its strengths, and point out the changes required to improve its praxis.

In the nursing context the evaluation by those involved in these DE-related experiences has shown contributions and challenges. Regarding contributions, the highlights were, shorter time and less costs, flexibility and democratization of access, and territorial accessibility [2,7]. The challenges that emerged, point out the need for adjusting online content and learning objects, adapting the activities proposed to the course's reality, and development of technological competencies[3,5].

In addition, interaction and autonomy of individuals emerged as huge challenges to be overcome in this context [8]. The last two aspects are getting more and more attention in studies that advocate for the maximization of DE-related experiences through the development of interaction between the many actors who are part of a virtual network, and to the building of autonomy in this field [8-9]. Studies should be developed in the nursing context that aim to understand interaction and autonomy in the DE-related experiences. The guiding question of this study was: "how are the dimensions of interaction and autonomy developed in nurses' experiences with the distance modality?"

The objective of this study was to understand nurses' experience in the distance modality regarding the dimensions of interaction and autonomy.

● **METHODOLOGY**

This was a case study which used a qualitative approach. The use of this approach was justified by the need for emphasizing people as the focus of the evaluation process, and what emerges through their subjective experiences[10].

The applicability of this case study is justified because it is a methodological referential capable of capturing contemporary practices, while preserving the holistic and meaningful characteristics of events in real life[11]. Here, the event "unit of analysis" investigated comprises the nurses' experiences with the distance modality in the dimensions of interaction and autonomy.

The Theory of Distance Interaction was used as a theoretical referential[8]. This theory is composed of the dimensions "Distance interaction" and "Student's autonomy". The first dimension has two measurable components: dialogue and structure. Dialogue is used to describe interactions among different actors (professor, student, and tutor) and can be intentional and valued by each party. The structure component discusses the set of elements used to design the course: presentation of information and learning objectives; content topics; case studies; illustrations; exercises; and, evaluations.

The dimension of autonomy involves the capacity of making decisions on their own learning; flexibility in activities management; independence to make decisions; and shared collaboration.

These analytical dimensions have clarified the definition of the following analytical categories: Distance interaction: dialogue and structure in the nurses' viewpoint; nurses' autonomy in their experiences with distance education.

The study was developed at a Federal Higher Education Institution (FHEI) in Minas Gerais. The

institution offers undergraduate course in nursing (on-site modality) that has now 360 students and 45 professors, of which 39 are nurses.

The participants included in this study were nurses that had used or were using DE in their professional institutions and also interacted with other institutions. Although they held teaching offices in the institution, they sought in DE opportunities for continuing their studies thus characterizing the insertion of these individuals in the situation of permanent education.

The study held semi-structured interviews with nurses in their offices, from December 2014 to February 2015. These interviews were recorded and then transcribed, and lasted 40 minutes on average. A semi-structured script was used with the following questions: a)Tell me about your experiences with DE; b) How could you evaluate these experiences in your teaching-learning process?; c)Tell me about the technological skills you had to develop to access DE?.

Invitations for interviews were e-mailed to the 39 nurses that were potential participants. Invitations were sent twice in a period of two weeks, and presented the research proposal, objective and methodology and described the inclusion criteria. Of the 39 nurses in the institution, 30 replied the e-mail claiming to fit the inclusion criteria and saying they could participate in the research. Based on this list of 30 potential participations, a random raffle was conducted to determine the sequence of interviews.

Saturation criterion was used to define the number of nurses to be interviewed. Information saturation is defined as the suspension of data collection when data obtained no longer present new elements to meet the objective proposed by the researcher[12]. Interviews were conducted with 13 nurses. In order to maintain and ensure anonymity of participants, they were coded with the letter "E" followed by the interview number E1, E2, E3 and so on. It is worth highlighting that all participants had read and signed the Free and Informed Consent Term, agreeing to the interviews.

Data collected were analyzed through the Content Analysis in the Thematic-Category modality[13]. The study made a 'floating reading' that allowed the first contact with the text to be analyzed and the alignment of the text with the study objectives. In addition, hypotheses were formulated jointly with the elaboration of indicators to support the final construction. This pre-analysis extracted text pieces, generating registration units that were encoded and analyzed following the rules of exhaustiveness, representativeness, homogeneity and pertinence. It then performed the content representations abstraction. Finally, inferences and interpretations were made generating categorization by convergence of the context units.

This study was approved by the Committee of Ethics in Research with Human Beings of the Federal University of São João Del Rei, according to the report # 011.

● **RESULTS**

Distance interaction: dialogue and structure from the nurses' viewpoint

Firstly, interaction was noted in the participants' speeches related to dialogues and closeness that contributed to the learning experience:

[...]the way we get closer to this work, this closeness, it is of searching, experiencing it in distance education you end up by learning [...]and you interact, talk with other persons involved, and by the end we learn with them, on the everyday.(E9)

In this context, dialogue takes on a different configuration:

[...]it escapes from the traditional way of transmitting knowledge in classroom, of keeping on talking, and we talk with many participants at the same time, including with tutors and professors[...].(E6)

However, participants have also recognized that sometimes dialogue is hampered by time differences between potential sources of provision and reception of information:

[...]but you had doubts, no one answered on time... and I needed that information at that time, but I

didn't have it [...].(E6)

This situation also contributes to the weakening of interaction:

[...]so... I was doing a lot of things alone, without talking... without debating with the tutor or professor... this makes the relation weaker[...].(E13)

Regarding structure as an element that maximizes interaction, nurses have firstly highlighted the availability of tools that contributed to the development of their experiences:

[...]Access to all links that were available, of support, there were self-explaining links that you could read, read again many times. So, it facilitated a lot[...].(E3)

Another respondent reinforces:

[...]the forum... the videos... the chats... it's fantastic!!! I could interact, make friendships... this is amazing and encourages us to continue studying[...].(E13)

However, the respondents' speeches show some evidence that technological tools wielded a high level of control over their experiences, characterizing the high level of structure in the courses:

[...]we must deliver 7 modules... and then the system is blocked, you can't do it anymore[...].(E6)

In addition, respondents reported difficulties in meeting the deadlines established:

[...]because you have to deliver until a given time[...]It is really the deadline that hinders[...]. (E12)

However, respondents recognized that the tools available on the technological platform sometimes could not meet the individualized needs for information, giving rise to impersonal, cold and unintelligible support:

[...]student always has the tutorial, but the tutorial is very impersonal, it shows really well what the platform has, but it does not identify my difficulties[...].(E1)

In addition, learning as a "solitary attempt" was highlighted as a concern of how the structure influenced their learning experiences:

[...]most of the things we learn by ourselves, is searching, brainstorming and learning with mistakes[...].(E5)

Moreover, another participant reported difficulty in finding what he wanted using the interface available on the course structure:

In the beginning it was painful! It took long time to find where I could get in touch with this thing, I looked on the links, wasting time... until I found[...].(E10)

Finally, participants recognized that the equipment used was inadequate to cope with the high-structuring of courses:

[...]many times equipment misses memory enough to that course[...]it is always down[...]the course has lots of videos, links, pdf materials, very heavy [...]. (E5)

Nurses' autonomy in their experiences with Distance Education

Participants have recognized in their DE-related experiences these possibilities.

[...] improving knowledge[...]; flexible time[...].(E4)

In addition, they found that DE led to reduced costs and less displacement.

[...]at home, no need for displacement, I guess it really facilitates. And without high costs[...].(E6)

These situations typical to the distance modality would contribute to autonomy.

[...]learning in a more autonomous way, mainly students, because they have flexible time, according to

their availability [...].(E9)

Moreover, the professor's role is repacked, as well as the students' responsibility for their learning which a kind of motivation developed is:

[...]the professor, I really felt they played a mediator role. So, he didn't have to bear everything... I guess I felt the responsibility was more mine, the responsibility for learning.(E3)

In this context one can notice an attribution of professors to a mediation role, placing students in the heart of the teaching-learning process.

The respondents' autonomy in their experiences with DE was also recognized through the possibilities of selecting a wide range of courses, continuing their studies, and the possibilities of professional work where they were situated.

[...]I started distance education in my second graduate course [...]then I developed several courses, so many that I can't tell you, I can't tell how many courses I took, I have taken more than one course at the same time, that's how I decided to do[...]. (E5)

Another respondent emphasizes this point.

[...]I took a graduate course oriented to management, distance course[...].(E10)

In a different way, other participants reported their DE experiences with tutoring in this modality andin specialization courses.

[...]I am seasoned as tutor, from the specialization course on training of health family experts[...].(E1)

This was also true for refresher courses.

[...]another experience I had as tutor was during the execution of an extension project in another higher education institution, where we promoted a distance refreshment course for laymen approaching care to ostomates [...]. (E11)

Other reports highlighted the use of DE to deliver undergraduate courses in nursing through an interactive portal:

[...]as professor, I'm having the experience with a subject, you see, that is woman's health, [a subject] of the 5thperiod, that we're trying to integrate into content, so we are using the portal [...].(E5)

Moreover, the study highlighted the benefits of DE on remedial teaching.

[...]so, in fact I've worked with distance education in another institution, in fact there it had two purposes. For some it was distance, and the other was remedial teaching[...]. (E7)

Another respondent reported experience with DE to design the didactic material, the so-called 'contentists':

[...]my experience as teacher was priceless[...]as well as contentist, of material to be available in distance education[...].(E9)

Despite the autonomy experienced in the distance modality, nurses reported some difficulties regarding putting it into practice. They recognized the lack of skills to organize their time in the face of the flexibility provided by the modality.

[...]time organization is left to us... [...]sometimes I still have difficulties to do everything on time, so we end up leaving to the last week, to the last minutes [...]. (E11)

Finally, respondents reported some a priori deficiency with handling of the tools of the virtual learning environment, and recognized that this tends to hinder the exercise of autonomy.

[...]a real hindering point is familiarity with automated working tools; I believe it can cause serious constraints to the DE student's independence to develop a satisfactory course[...]. (E11)

Another respondent reinforces this viewpoint.

[...]and use the tools, you see, in proper way[...]if you are not familiar with the tool, it is harder[...]. (E1)

Respondents recognized previous knowledge about informatics as a requirement to exercise autonomy in their DE experiences.

[...]first you must know, have knowledge about informatics. I perceived some fellows were not so skilled to handle with some computer tools, they face more difficulties[...].(E3)

Another participant endorses this view.

[...]as I had facility to work with computer tools, I didn't feel difficulty to be independent and take the course. (E12)

● DISCUSSION

With relation to dialogue it was observed that it occurred mainly between participants and served the interests of socialization and of collaborative learning. This dialogue setup breaks with the traditional unidirectional transmission of information by establishing several multi-direction dialogues to provide sustainability to "learning networks"[14-15]. In this way, learning overcomes temporal or spatial distance and promotes meeting, interaction and cooperation which are elements of on-site education and which are also evidenced in cyberspace[16].

Nurses have also referred to the obstacles posed to dialogue, which were related to time difference between several participants in virtual experiences. Sometimes learning was a solitary experience, rather than occurring in a joint and collaborative way. If on the one hand there are several sources and transmitters of information operating in a collaborative and shared perspective, on the other hand these sources/transmitters are individuals that operate in a given time and space and often these spaces and times differ[15]. The experiences with DE being developed in nursing should not disregard these factors. What defines success is whether the interaction maximized by dialogue is farther or closer to the course design, its pedagogical principles, technologies and the fostering of the relationship between students, teachers and tutors[17].

The second component – the structure – emerged from reports based on the use of technological tools and the concept of control (establishment of dates, deadlines, and limits) found in experiences with DE. The courses reveal the concept of high-structuring oriented to adults and provide all the technological apparatus of virtual environments (forums, links, chats, hypertext, and self-instruction videos)aimed at learning in a controlled way and with some degree of independence. In this model, elements available in the course dictate the volume and frequency of activities guiding the pace of the teaching-learning process[8]. Highly structured courses allow less dialogue between teachers and students, as well as less interaction at a distance[8]. This set-up cannot be evaluated either as positive, or negative as this would be a decision for the institution providing it. However, it is important to call attention to the need for knowing these possibilities and selecting the option that is most responsive to the target audience in the context of permanent education in nursing. Besides being responsible for pedagogical principles, these institutions should discuss the course's degree of structuring, the possibilities and setup of dialogues that are to be established, as well as the applicability of content to the work context in which the individual is situated which, in this case, is the health sector.

Still in the structure component, participants considered some aspects of their experiences with DE as negative. They highlighted that most of the technological tools available provide impersonal support that is not responsive to individual demands. It should be considered that these DE programs are built, either intentionally or not, to serve a community where all participants are equal and, therefore, have the same need for information[18]. Therefore, structuring a distance course contradicts the very features of the modality where the nurse is placed at the heart of the learning-teaching process and is an active participant in the process that appraises their individualities, demands and aspirations for knowledge. The nursing context should foster the creation of technological tools that appraise individuality and encourage critical-reflective training. Otherwise, their experiences in DE will be nothing but the reproduction of the traditional mechanisms established in a traditional classroom and oriented to transmitting knowledge.

Another issue raised regarding structure had to do with the inadequate interface, recognized by the difficulty in finding the information intended in the virtual environment. This is another problem which needs to be overcome to build collaborative rooms in the context of DE in nursing. Because of the high level of courses' structuring the experiences demand adequate equipment from students and the lack of it make learning experiences impossible. Today, there is a wide range of technological tools in the DE context, but some are not feasible using low-processing capacity equipment. The selection of these technologies should be geared to candidates before they start, considering this is a sine qua non condition to fully develop the course.

Nurses recognized the dimension of autonomy based on characteristics found in their experiences with the distance modality (flexibility of time/displacements, cost reduction and decision for searching for improvement). In addition, the relation between teacher and students which is a core element in developing autonomy found other characters and formats, according to the participants' reports. According to the experience of these nurses, students also learn from other students, teachers and tutors, in a relationship where students are responsible for their own learning. The teacher's role, in turn, is that of a mediator who also learns in this relation. When autonomy is exercised it makes students responsible for their learning, sharing this responsibility with other actors (other students, teachers and tutors)[17].

Autonomy, as the power of selecting and making decisions on their DE-related experiences, has presented different forms: the possibility of taking on different roles (teacher, student, and mentor), and independence in decision-making because of the opportunity to try different and simultaneous educational experiences. The first one establishes the possibility of standing in the other's shoes, and, as such, identify from this space the difficulties and possibilities of teaching and learning. In a society with a strong tendency towards the industrial educational model, focused on teachers as the center of the educational process[19], a new possibility emerges, that of empowering students, teachers and tutors, and recognizing their potential to create knowledge. For nursing, this is yet another advantage of the distance modality, because in addition to promoting a new setup for the teaching-learning process related to the profession, it also empowers nurses to work on new fronts: as teachers, tutors, contentist, designers and in other roles during the developmental of courses in the distance modality.

With regard to the nurses' independent decision making in choosing diversified and simultaneous educational experiences, it shows the possibility of continuing studies as a personal decision. This can be understood as an important aspect of the nurses' autonomy, as it ensures the possibility of improving their prospects in the labor market.

The exercise of autonomy also faces challenges that should be overcome in the context of DE-related experiences in nursing. The first, highlighted by the study participants, was the lack of skills to deal with the flexibility typical to DE. In the viewpoint of these individuals, the organization of their time and activities in an independent manner was a challenge. Autonomy depends on a maturation process that happens based on their experiences. When nurses join a community of shared ideas, and are supported by someone who is more competent, they can gradually and in a more individualized way (with their own experiences), take on responsibility for their own learning[8-9].

The second challenge encountered in the exercising of autonomy regards the lack of previous technological skills. This is a recurrent fact in the nursing context[20-21]. This weakness can damage the DE-based learning-teaching process.

● **FINAL CONSIDERATIONS**

Interaction was highlighted through the components of dialogue and structure. Regarding dialogue, it was found to occur mainly between students and in the context of socialization and collaborative learning. Regarding structure, the study found the concept of high-structuring and control made possible by the maximization of technological apparatus. In the dimension of autonomy, learning was networked in a collaborative way, maximized by the following characteristics: time/displacement flexibility; cost reduction; and the decision to search for improvement. However, challenges such as lack of skill in handling the flexibility typical to DE and some inexperience regarding previous technological skills, need to be surmounted.

The contributions of this study lay in the disclosure of aspects that contribute to the development and improvement of courses oriented to the permanent education of nurses. Interaction should be maximized through dialogue, sharing and cooperative learning. The structuring of these courses should also be discussed to approach the profile of professionals engaged in these experiences. In addition, autonomy as a challenge to be surmounted in this context should be consistently evaluated to promote students' skills in developing their DE-related experiences. Finally, the distance education courses oriented to permanent education in nursing are expected to be built based on a well-designed pedagogical concept capable of providing interaction and fostering autonomy.

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