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Prevention and control of infection in professional nursing training: a descriptive study

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ABSTRACT

Aim: to offer subsidies to broaden the discussion regarding the teaching of practices in the prevention and control of infection in the training of nurses. **Material and Methods:** an exploratory, descriptive, qualitative approach, based on the Collective Subject Discourse method. The participants were 42 nursing students from a Brazilian higher education institution. Data were processed and analyzed by the Descending Hierarchical Classification. **Results:** four classes of nursing care were obtained in the prevention and control of infection, the conceptual bases, responsibilities and the acquisition of knowledge for safe care. **Conclusion:** the training of human resources in nursing with the emphasis on infection prevention and control is challenging, especially due to the constant evolution of the theme. In this dynamic scenario, nursing education requires, among other aspects, to overcome conceptual weaknesses and misconceptions for the development of safe and harmless health care.

Descriptors: Prevention & Control; Infection; Education, Higher; Nursing.

INTRODUCTION

Health care-related infections (IRAS) have a considerable impact on the morbidity and mortality rates in the intra- and extra-hospital environment, resulting in an increase in the time spent and costs of hospitalization, and are thus recognized as a serious world public health problem⁽¹⁾. One of the greatest difficulties in the prevention of IRAS relates to organizational aspects: the training and qualification of human resources sensitive to the problem, and who are conscious of, and responsible for, the maintenance of a biologically safe environment⁽²⁾.

Despite the voluminous and systematic technological investment in the diagnosis and treatment of patients, especially in hospitals, clinical practice is still full of failures and grievances. This is mainly due to the qualification of human resources that appear to have not accompanied changes in health care⁽²⁻³⁾.

Safe practices with an emphasis on infection prevention and control show deficits in Brazilian higher education institutions (IES – from the Portuguese “Instituições de Ensino Superior”), a problem experienced also in other Latin American institutions, especially regarding the training of professional nurses⁽¹⁻⁵⁾.

In the IES, the theme, when exploited, is done in a fragmented way: content is diluted in various disciplines, losing its importance and practical applicability throughout the curriculum⁽⁵⁻⁷⁾.

The reflex of this is observed in clinical practice: poorly motivated professionals, developing an “uncritical practice”, low adherence to standard precautions and with repercussions on the rates of care-related grievances. The human resources factor is considered to be extremely important for the prevention, control and surveillance of IRAS, since, historically, the propagation of micro-organisms has always been linked to the professional⁽⁷⁻¹⁰⁾.

Thus, the guiding question of this research was: How and in what moments the theme of prevention and control of infection in health services is explored in the curriculum of the Brazilian Nursing courses? The objective was to offer subsidies to expand the discussion of the teaching of prevention and infection control practices in the training of the nursing professional.

METHOD

This was an exploratory, descriptive, qualitative approach based on the Collective Subject Discourse method. This method allows the verbal empirical data (statements) to be organized, and the collective thinking can be grouped into categories that originate from the key expressions taken from the interviewees’ discourses⁽¹¹⁾.

The study was carried out at the Center for Research on Prevention and Control of Infection in Health Services – NUPCISS (from the Portuguese Núcleo de Pesquisas em Prevenção e Controle de Infecção em Serviços de Saúde) at the Federal University of Piauí (UFPI), with students studying for a bachelor’s degree in nursing as participants. The course was established in 1973 and offers 40 places per semester.

The study counted on the participation of 88 undergraduate nurses from the UFPI, 42 of whom were selected by disproportionate stratified random sampling, comprising of two classes. We included students regularly enrolled in the institution, who attended the final or penultimate semester of the nursing graduation, being necessarily active and developing academic practices in institutions providing health care services. Students who were withdrawn from the course or who declined to participate were excluded from the study.

A semi-structured guide with three open questions about training in the prevention and control of IRAS was employed. Data were collected from May to November 2015, in a private room of the institution, by specialists in the area. Recorded interviews had an average duration of 35 minutes, and were later transcribed. At the end of each interview, participants were asked if they would like to withdraw from the research or change their responses. It should be mentioned that there were no withdrawals or changes in the reports.

For the processing and analysis of the data, IRaMuTeQ (acronym of Interface of R pour les Analyses Multidimensionnelles de Textes et de Questionnaires) software was used. The resulting data were analyzed by the Descending Hierarchical Classification (CHD – from the Portuguese Classificação Hierárquica Descendente) method⁽¹²⁾. This method allowed classes of segments to be obtained that presented vocabulary similar to each other, but at the same time different from other segments of text, which generated groupings of words, called “pre-class”. Then, the key expressions were extracted from the interviewees’ speeches that complemented the CHD findings, which allowed the delimitation of the speeches in definitive classes.

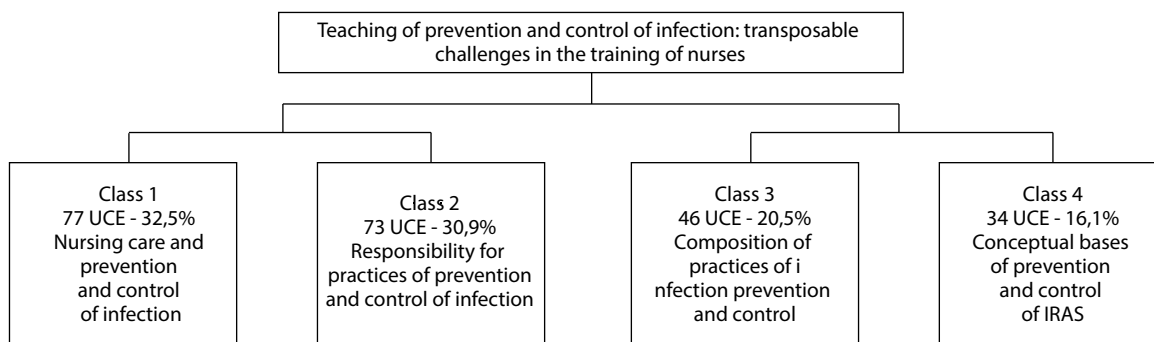
This research was approved by a Committee of Ethics in Research (Protocol: 1,035,368), in compliance with Brazilian standards of research involving human subjects. To preserve the identity of the nursing students, an alphanumeric system was used using the codenames “EST”, followed by an Arabic numeral.

RESULTS

Of the 42 participants, 30 were women; the average age was 24 years and the majority were in the last academic semester (76.1%). IRaMuTeQ recognized the separation of the *corpus* into 260 elementary context units (UCE), from 42 initial context units and 285 text segments. A total of 10,097 occurrences were recorded, and the exploitation was 88.2% of the total *corpus*. From the results obtained, we analyzed the textual domains, interpreting the meanings and gave them names with their respective meanings in classes (Figure 1).

The initial material (*corpus*) contained elements that addressed the knowledge, practice and responsibility of nursing students related to the control of infection. After the identification of the key expressions, the following classes were

Figure 1 - Structure of the thematic classes about the practices of prevention and control of infection arising from the reports of undergraduate nursing students. Teresina (PI), 2015.



Note: UCE: Unidade de Contexto Elementar (Elementary Context Unit).

Source: Direct research.

obtained, which in their entirety refer to nursing care aimed at the prevention and control of the risk of infection through the meaning attributed to the phenomenon (classes 1 and 2), in addition to concerns with the theoretical and conceptual aspects in obtaining knowledge about practices of control and the prevention of infection (classes 3 and 4).

Class 1: Nursing care and the prevention and control of infection

In this class, the historical participation of nursing was evidenced with regard to infection prevention and the control practices of Florence Nightingale who, in 1863, had already described a series of procedures related to patient care and environmental control that aimed to reduce the risk of hospital infection. Despite the evolution of the problem, and the scientific and technological investments spent in health care over the years, the participants demonstrated a simplistic view regarding controlling the risks of infection, assigning great responsibility to isolated practices of the hygiene of hands and surfaces.

The nurse, despite being recognized as an agent that minimizes risks to patient safety in order to maintain quality of care, needs to be able to advance the historical process and, in fact, recognize the complexity of the chain of infection and its components. Thus, to anchor their "praxis" in valid knowledge and practical application.

"This about control Florence was doing already, isolating the sicker patients and cherishing asepsis."(EST. 1)

"The practice of nursing is based on the principles that govern infection control: asepsis, cherishing the technique ... not to cause harm" (EST. 26)

Class 2: Responsibility for practices of prevention and control of infection

The control of infection is still seen as a challenge, as well as listing responsibilities for injury-free care from professional practice.

The reports were heterogeneous, however, they were centred around the nurse, the staff and the manager, giving the figure of the professional special preventive emphasis, by the activity itself, which requires more contact and for a longer time; in addition to the comprehensive training from the basic cycle.

Responsibility for the grievance seems to guide, or at least influence, professional conduct, which when merged with practice and the construction of specific knowledge influence in determining the "guilt", supported in the prevention of error, regardless of having been practiced individually, in teams or with institutional connivance.

Thus, it is clear that the process of blame is already recognized in student discourses and involves the transfer of responsibility to another, until recognition of the multicausality of the grievance.

"The person in charge of the team is the registered nurse, but who exercises the practice? Who is always there doing the activities and dressings on the patient is the practical nursing, and there is no way for me to watch ... besides, there are some old [practice nurses] who complicate..." (EST 37)

"The responsibility to prevent and control infections is collective, belongs to the team, belongs to us, students, and our teachers who have formed us. It is even necessary to include the users in this process." (EST 07)

The inclusion of the health user in this process is considered a step forward, since current recommendations for prevention and control of infection encourage the active involvement of patients in their own health care as a safety strategy.

Class 3: Composition of practices of infection prevention and control

Most of the infection prevention and control measures were restricted to the use of personal protective equipment (PPE) and hand hygiene, which were extremely superficial, with the aim of dealing with subjects with qualification superior, supposedly, specific.

There is a strong appeal to the technique, which generally reproduces a training centred on procedures and “uncritical reproduction” without ideological clarity. In addition, the tangentiality with which IRAS prevention was achieved, with only individual protection measures listed without proper contextualization with patient safety principles, indicates a strong ideological divergence with the purposes of altruism preached by nursing.

“Mainly wash hands before and after performing the procedure and use of PPE...” (EST 14)

“I believe that here in the course they were very efficient with infection prevention, showed how to wash hands, that we should use PPE, surgical wash, basically is this...” (EST 28)

“I did not even know how to put an N-95, and did I know why I should use it? Of course not ... I think the training should be more dynamic and englobative.” (EST 29)

The acquisition of knowledge acquired during graduation seems to influence the construction of the concept, the establishment of risk factors, and the capacity to enclose prevention and control measures. This acquisition, however, proved to be superficial and insufficient, resulting in the dichotomy between theory and practice. Possibly this configuration will have reflexes in professional practice, as well as socially shared knowledge.

The theme “infection control” is explored superficially and generically, in general, in the so-called “fundamental in the professional or clinical scope” disciplines, with difficulties of articulation with the actual situation of health care.

In addition, the occasions for approaching the subject in the undergraduate program are punctual, especially considering the preparation and difficulties of the teachers in delivering the content in a contextualized way to the current principles and recommendations.

Class 4: Conceptual bases of prevention and control of IRAS

The concept of IRAS presents a deficit among the students, who did not know how to conceptualize the term, revealing a poverty of content. Some have restricted IRAS to hospital infections, and in trying to define diagnostic criteria they have done so erroneously. Those who mentioned community infection, defined it as a denial of the hospital infection, which represents a conceptual insufficiency, and points to a hospital-centred formation.

It is noticed that the occurrence of hospital infections is still not an object of reflection of these future professionals, who will leave these academic institutions with the concept still as an abstract notion. The idea given to the concept of IRAS reveals the whole structure of care practices. When the aggravation is not truly known, it

is not possible to diagnose it and, consequently, listing prevention and control measures also becomes a challenge, which changes all of the representation attributed to the aggravation.

“They are diseases that are acquired through contact between people, mainly between professionals and patients, and it has to do with the lack of hygiene and cleaning in the environment”. (EST 06)

“It is an infection that you contract within the hospital environment and that is resolved there, because if you leave, there will be a community infection.” (EST 12)

“It is an infection that is acquired in the hospital, and has a time of 48 hours to be in the service because otherwise it is no longer an infection.”(EST 25)

DISCUSSION

In Brazil, the problem of the formation of human resources in health care is challenging for educational institutions, especially in the professional competences aimed at the prevention and control of infection.

Historically, the theme of “hospital infection” represents one of the greatest challenges to public health, being a subject of discussion in both educational institutions and health care, which, however, little progress has been made with regard to the psychosocial aspects of health care professionals⁽¹³⁻¹⁴⁾. It is necessary to be aware that this is not an isolated infectious disease, but an aggravation that results from the evolution of clinical practices forged in the care

model, with a curative characteristic, in which invasive procedures for diagnosis and therapy predominate^(1,4).

Nursing, because it has greater contact with the patient and develops a large part of the procedures, has a direct responsibility in the prevention and control of hospital infections, and should be kept up to date in order to use scientific evidence in the development of its clinical practice⁽¹⁵⁾.

Although nurses have a greater responsibility for the prevention and control of infections, especially in a hospital environment, their actions are dependent and interrelated with the entire health team. The very etiology of multiple causality attributed to IRAS forces us to highlight professional actions and, consequently, errors, as an important exogenous factor. Therefore, students and professionals should be aware of their civil responsibility, as well as the possibility to respond criminally and civilly for their acts⁽⁴⁾.

From this perspective, responsibility must be socially contextualized and encompass the entire organizational structure, government, institutional and administrative policies, together with interpersonal and intersectoral relationships at work.

In addition, emphasis should be placed on aspects related to the adherence of infection prevention and control measures, commitment to the service and patients, knowledge of the epidemiology of infections and continuous professional training, including continuing education^(1,15).

To this end, teaching about the prevention and control of infection must be part of the pedagogical project of professional training of all courses in health care, and this content must be explored transversally in the curricula, allowing the subject to be developed in the professional disciplines according to the depth and clinical situation required^(7,10,16).

It is believed that in order to overcome the flaws and problems listed, it is necessary to recognize that all health care activities have fragile points that can compromise patient safety and that the key to reducing risk is the creation of a structured environment based on the culture of vigilance and cooperation, replacing the culture of guilt⁽¹⁷⁾.

The investment in the teaching-learning process based on competencies, that is, knowledge, skills and attitudes dispensed throughout the undergraduate course, allows the student to overcome the inherent challenges in obtaining safe care practices, and to perform with excellence the expected procedures in their professional practice⁽¹⁸⁾. However, it seems that training in undergraduate nursing is still limited to insufficient historical principles, such as hand hygiene and the use of PPE, which are considered priorities by the participants of this research.

The superficial and diluted approach in several disciplines, given the subject under study, is a challenge to overcome. In this format, the responsibility for teaching good prevention and control practices is divided between different teachers who explore it in the way that suits them, without consonance with their peers, which results in superficial and poorly articulated learning. In clinical practice, students adopt this or that preventive measure, according to the patient's procedure or diagnosis, rather than the full adoption of all available individual and collective technologies of prevention^(10,16,18).

It's relevant, in the provision of theoretical contribution in the curricular grade, the implementation of infection control protocols in order to provide support to improve the level of knowledge of the undergraduate students, especially in what concerns the apprehension of the concept and of risk factors, or the analysis of existing and in use protocols in practice support units, so that acquired knowledge is applied in practice⁽¹⁶⁾.

The conceptual bases need to be grounded and objective in order to establish a connection with the practice carried out^(1,10). As an example, caused estrangement the report of the subjects indicating the use of the Nursing diagnosis "risk of infection", due to the lack of knowledge of the signs and symptoms of the same, required for the elaboration of diagnoses and subsequent intervention.

It is believed that the nursing graduation is the ideal moment for the presentation of aspects related to the prevention and control of infection, and they should be deepened as clinical experiences progress. This training should be complemented with extension and research activities, in order to constitute a mentality or professional knowledge about the prevention and control of infection, overcoming the occasional and punctual approach^(7,10,15).

The development of clinical skills and student performance are directly influenced by the available learning resources and the ability to innovate with these resources. Thus, it is indicated that the use of software, online modules and simulated scenarios that facilitate the learning of the theme and facilitate its fixation⁽¹⁹⁾.

Another determining factor is teacher qualification. Although this study did not directly involve the teaching class, it is worth pointing out that experiences in teaching interfere in the process of academic formation, and are reflected through aggregated knowledge throughout the professional trajectory. Teachers can contribute to the training of professionals who are aware of safe practices, increasingly qualifying nursing assistance when managing the teaching-learning process⁽²⁰⁾.

This research has limitations caused by the type of study used (descriptive-transversal). The design used does not allow for the follow-up of participants, which would allow for the measurement of knowledge throughout training, as

well as a comparison between academic blocks and disciplines taught. This limitation points to the need for other studies to respond to this questioning.

CONCLUSION

The theme of prevention and infection control in undergraduate nursing education is configured in a historical and social event that, due to its complexity and repercussions, requires pedagogical investments in order to concretize learning in a contextual and integrative way.

For the participants of this study, "nursing care" should, in essence, be based on principles that refer to the prevention and control of infection, since they minimize the damage related to health care and promote safety. However, conceptual weaknesses or misconceptions prevent this assistance from being exercised on a solid theoretical basis, either by lack of knowledge, difficulty in listing signs and symptoms, or by transferring responsibility to other professional categories, to the detriment of the recognition of professional civil liability or even of collective responsibility.

Still, the greater responsibility for such errors seems to be related to the distribution of content in the curriculum, associated to a lack of deepening given to the theme, which does not allow fixation of the same, although there was no evaluation of content or curriculum in this study.

Thus, it is believed that the teaching of infection control should integrate the curricular structure of nursing into the professional disciplines, complemented by research and extension activities and be explored in greater depth whenever necessary, providing practical activities pertinent to the professional practice.

Only the establishment of an integrated teaching philosophy, based on the technical and

ethical principles of the control and prevention of infection, will enable nursing students to mobilize and seek, in an articulated and proactive way, actions aimed at patient safety that influence the recognition and epidemiology of adverse events related to infections, which have repercussions on the quality of the health care provided.

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