Original Article

Technology in an intensive care unit: delineation of a figure-type of the nurse*

Tecnologia em ambiente de terapia intensiva: delineando uma figura-tipo de enfermeiro

La tecnología en un ambiente de cuidados intensivos: delineando una figura-tipo de enfermero

Rafael Celestino da Silva[1], Márcia de Assunção Ferreira[2]

ABSTRACT

Objective: To describe the characteristics of the figure-type of a nurse to work in intensive care environments, with reference to the social representations about technology. **Methods:** As a reference, we applied the theory of social representations. A qualitative research approach was used, with interviews with 11 novice and 13 veteran nurses, analyzed using thematic content analysis. **Results:** The meanings attributed to the environment, patients and caring from the social representation of technology, demanded the need for a figure-type of "nurse", characterized by personal qualities such as: proactive, emotional balance, communication/relationship skills; techniques such as observation skills and leadership, speed, dynamism, technical and expressive skills, to work in the scenario of intensive care. **Conclusions:** The clinical competence in these critical units raises the evaluation of cognitive and psychomotor skills of nurses.
Keywords: Biomedical technology; Intensive therapy units/trends; Nursing care

RESUMO

Objetivo: Descrever as características da figura-tipo de enfermeiro para atuar em ambientes de terapia intensiva, tomando como referência as representações sociais elaboradas sobre a tecnologia. **Métodos:** Como referencial, aplicou-se a teoria das representações sociais. Pesquisa de abordagem qualitativa, com realização de entrevistas e com 11 enfermeiros novatos e 13 veteranos análise de conteúdo temático. **Resultados:** Os sentidos atribuídos ao ambiente, cliente e cuidado a partir da representação social da tecnologia, demandaram a necessidade de uma figura-tipo de enfermeiro, caracterizada por qualidades pessoais, como postura pró-ativa, equilíbrio emocional, habilidade de comunicação/relacionamento; técnicas, como capacidade de observação e liderança, rapidez, dinamismo, habilidades técnicas e expressivas, para trabalhar no cenário da terapia intensiva. **Conclusões:** A competência clínica nas unidades críticas suscita avaliação das habilidades cognitivas e psicomotoras do enfermeiro.
Descritores: Tecnologia biomédica; Unidades de Terapia Intensiva/tendências; Cuidados de enfermagem

RESUMEN

Objetivo: Describir las características de la figura-tipo de enfermero para actuar en ambientes de cuidados intensivos, tomando como referencia las representaciones sociales elaboradas sobre la tecnología. **Métodos:** Se aplicó la teoria de las representaciones sociales como referencial. Se trata de una investigación con abordaje cualitativo, realizado con entrevistas a 11 enfermeros novatos y 13 veteranos y análisis de contenido temático. **Resultados:** Los sentidos atribuidos al ambiente, cliente y cuidado a partir de la representación social de la tecnología, demandaron la necesidad de una figura-tipo de enfermero, caracterizada por cualidades personales, como postura proactiva, equilibrio emocional, habilidad de comunicación/relacionamiento; técnicas, como capacidad de observación y liderazgo, rapidez, dinamismo, habilidades técnicas y expresivas, para trabajar en el escenario Del cuidado intensivo. **Conclusiones:** La competencia clínica en las unidades críticas suscita evaluación de las habilidades cognitivas y psicomotoras del enfermero.
Descriptores: Tecnología biomédica; Unidades de terapia intensiva/tendencias; Atención de enfermería

---

** Paper extracted from the Master's thesis entitled: "Technology and nurses in the Intensive Care environment: an encounter mediated by social representations", presented in the Nursing Graduate Program at Escola de Enfermagem Anna Nery (2008), Universidade Federal do Rio de Janeiro – UFRJ – Rio de Janeiro (RJ), Brazil.*

[1] M.Sc. in Nursing. Assistant Professor, Fundamental Nursing Department and Ph.D. Student at Escola de Enfermagem Anna Nery (EEAN), Universidade Federal do Rio de Janeiro – UFRJ – Rio de Janeiro (RJ), Brazil.

[2] Ph.D. in Nursing. Full Professor, Fundamental Nursing Department, Escola de Enfermagem Anna Nery (EEAN), Universidade Federal do Rio de Janeiro – UFRJ – Rio de Janeiro (RJ), Brazil.

Corresponding Author: **Rafael Celestino da Silva**
Av.: Nossa Senhora de Copacabana, 1181 - Apto 504 - Copacabana - Rio de Janeiro - RJ - Brazil
CEP. 22070-010 E-mail: rafaenfer@yahoo.com.br

Received article **16/04/2010** and accepted **10/04/2011**

INTRODUCTION

This research departed from the study of nurses' social representations (SR) about technology in the intensive care environment. In this perspective, it is affirmed that SR about technology are developed based on the meanings attributed to the intensive care environment the technology is inserted in.

The intensive care sector induces thoughts on situations connected with death, suffering, severity and fear which, in turns, guides the construction of thoughts about technology articulated with care in this sector. That is the case because, due to the fact that technology has the power to replace certain organic functions, offering support or maintaining clients' life, its use in this environment makes people presuppose a condition for the client that, as a result of preliminary ideas about the environment, make them associate technology with greater instability, complexity, severity and greater proximity with the client's death[1]. This imaginary of death, severity and suffering that surrounds the Intensive Care Unit (ICU) environment is highlighted in other studies, including a study that looks at the contradictions in humanized nursing care delivery at the ICU[2].

This representation about technology implies a professional nursing action characterized by a superlative of some elements. Thus, as intensive care clients are in more severe conditions and closer to death, they will need distinguished nursing care, through the application of specific knowledge during direct care, paying more attention and intermediating a wider range of knowledge: semiologic, physiopathologic, about nursing care and equipment[1]. This care notion is recurrent in literature. Agreement exists that care complexity requires high levels of technical-scientific competency, as the client's life or death involves decision-making skills and the adoption of safe conducts[3].

As care gains such peculiar characteristics, it demands nurses with attributes capable of responding to the care demands deriving from SR constructed about technology. The existence of a figure type originates in research results, in line with a study on the structure of SR about intensive care nursing work, in which the personal and professional attributes of nurses necessary for ICU work stood out[4].

The figure type outlines what professional should work in technological contexts. These nurses join typographic characteristics that distinguish them in the class of ICU professionals. Identifying this figure is important, as the SR need to contain elements related to the co-actors, so that the group members know that the representation expects to be shared by potential partners[5].

ICU nurses do not always display these typographic characteristics, as many are newcomers[6], inexperienced in intensive care, mainly with regard to the machinery incorporated in care. This is due to the application of different criteria for nursing distribution across hospital sectors, generally based on service needs instead of specialization, background experiences or preferences.

The professionals are expected to have clinical competences though, with a view to identifying clients' physiological alterations and using the technologies characteristic of this environment, mitigating clients and relatives' anxiety and enhancing interdisciplinarity[7]. In this context, a "technological language" needs to be understood which permits handling the technology and delivering client care. Due to their inexperience, novel nurses' activity is limited[6] and, as they do not know the "technological language", a "care ban" exists[1].

This discussion is important for patient safety and care quality, like in a research accomplished at an ICU for example, in which 85% of 113 iatrogenic events were related with the nursing team[8].

In view of the above, this research intended to answer the following question: To work at an ICU, do nurses need specific attributes, characteristic of the type of activities demanded in this context? The goal was to describe the characteristics of the nursing figure type to work in intensive care, based on SR about technology. This study is justified in view of the fact the SR about technology, in view of the client's severity and death, affect nursing actions, demanding ways of acting that respond to these characteristics as, on the opposite, they may hamper nursing care and clients. Hence, the debate about the type of professional gains relevance.

METHODS

This descriptive and qualitative study was based on Social Representations Theory (SRT). SR are subjects' consensual pieces of knowledge, which express knowledge, attitudes and practices, directing their actions in the world. One of the characteristics of SR objects is social relevance, whose indicator is the presence in daily conversations, arousing discussion and subjects' positioning towards them[9]. Technology, mainly in the intensive care universe, is relevant for the nurses who use it in their daily care practices. The technological machinery used in intensive care is very complex, causing a mixture of admiration and fear, constituting an object of SR for the nursing group, which justifies the application of SRT in the approach of this object.

The place of study was the CardioIntensive Unit (CIU) of a large federal hospital in Rio de Janeiro City. In total, 30 nurses worked at this unit. After the application of inclusion and exclusion criteria, a group of 24 participants was constituted, as professionals active

in CIU client care during any shift were selected during the research period so as to agree with their participation. Thus, four were excluded due to a leave of absence, two because they did not declare their consent with the study participation. The 24 participants were classified in two groups, according to their time of work in sectors equipped with high technology: the newcomers were professionals with up to two years of work, while the veterans included the remaining professionals.

Individual and exploratory interviews were held on ways of dealing with technology, facilities and difficulties in this contact and nursing characteristics to work at an ICU. Thematic content analysis was applied and the frequencies of theme words were calculated to organize empirical categories on the personal and technical characteristics of the ideal nurse to work at an ICU.

The subjects' identity was codified using the letters: Nu: nurse; Ne: newcomer; V: veteran; F: female; M: male, Ni: night shift; D: day shift; followed by the interview sequence number. Protocol No 000.298 attests the approval of the Institutional Review Board at *Hospital dos Servidores do Estado*-RJ. Data were collected between December 2007 and March 2008 after the subjects had signed the Informed Consent Term.

RESULTS

Out of 24 subjects, 21 affirmed that an ideal type of professional exists to work at ICUs, with personal and technical qualities to work in this scenario.

Personal characteristics

Intensive care sectors are seen as distinguished and marked by intense knowledge renewal as a result of technological advancements, demanding a pro-active attitude from nurses, with interest and desire to seek knowledge with a view to its application in client care, an aspect both newcomers and veterans reinforce in ten cases.

You think that you've already seen enough to deliver care, and suddenly you see that you don't know how to handle it. You see how much you need to search, study, not just await training at the sector, but participate in courses, lectures and get better. (NuVFD2)

Being willing to learn each day, wanting, being willing to seek knowledge every day. Everything changes very fast and different cases show up, if you don't attempt to learn, get better, get qualified, you stagnate over time. (NuNeFD15)

When addressing the nursing profile, the newcomers talk about a certain extent of hierarchization, directed by different development levels among the professionals:

Being willing to learn, and get specialized, because the team has to be able to count on your work, because, without previous knowledge about technology, about hemodynamics, you'll be kind of a dead weight. (NuNFD3)

To respond to the qualities inherent in the ICU care environment, a space in which death stands out, generating feelings of tension and stress in professionals and fear in clients, nurses need emotional balance. This characteristic was mentioned on four occasions, besides one co-occurrence with the ability to know how to work in a place loaded with tension.

There should be an assessment, it's a stressing sector, in which death is more imminent, not everyone can do it. You need clinical preparation, study but, above all, you need emotional support and stability. (NuVFD7)

You need emotional balance, willingness, because it's complicated if you have other bonds, leave different and sometimes even equal scenarios, to keep up this stressful journey. Another quality is the ability to live with tension and pressure, it's difficult, but this characteristic is necessary. There are people who are technically good, but who don't know how to work under stress in situations that go beyond routine. (NuVMNi13)

Being fearless, enjoying challenges and being willing to undergo new experiences every day were qualities six interviewees appointed. That is so because, in this environment, difficulties can come up at any time and, thus, professionals will have to be ready for the situations they are confronted with.

A professional who works at a sector like this one, has to be fearless, always be ready for new adventures, risk situations, because he may be contacted for some emergency any time, so he always has to be ready, always alert (...) he cannot be afraid of the patient. (NuVFD6)

As a result of the need for emotional balance, though, nurses may be perceived as people without feelings. That is justified by the fact that they are frequently in contact with situations of death and suffering, as they deal with a context of constant severity and instability.

A time comes when [we] become hard, inert to what is happening. If the patient is suffering, he's suffering, if the patient died, he died. They see that, that we end up turning into a rock. I've already heard them saying that to me: "You're a rock." It's not like that, but people think that, because we deal with that a lot, we end up getting accustomed to seeing people's and family members' suffering. People on the outside see me like that, definitely. (NuNeFD10)

It should be reminded that one of the characteristics

in the nursing profile indicated to work at these units is having an affinity for this specialized knowledge area, liking and feeling well about the activities performed.

Mainly who likes it, I think the primary thing is that you like to work at a closed sector. If you don't like to work with certain types of patients or certain types of cases, it's better to work somewhere else. You have to like dealing with this equipment, working with risk patients all the time. (NuVFD4)

Besides, you need to be communicative and have relationship skills, so as to interact with all multiprofessional team members working at a given moment, to direct the activities that need to be accomplished.

Ability to relate as a team. In no sector like intensive care this ability is that important. So, that should be a characteristic, a professional quality. ICUs join all health specialties. You need to relate with everyone. (NuVMNi13)

Professionals have to be agile, smart, communicative, because a lot of procedures are happening all the time. You need to be communicating with the rest of your team. If you're a selfish professional, who wants everything for himself, who thinks that only he know, working at this unit is not appropriate. (NuNeMNi20)

Technical characteristics

According to seven testimonies, to deal with certain client characteristics, including: instability, unpredictability, complexity and severity, it is fundamental for nurses to be observant, fast and dynamic. These qualities are justified by the sudden and acute changes that happen in clients' clinical conditions, generally due to the worsening of their condition, entailing hemodynamic instability that, in most cases, generates the need for rapid action by the multidisciplinary team, including effective equipment handling.

I think it has to be a calm, observant, fast, dynamic person. You have to be fast to work faster in an emergency. (NuVFD9)

You need to be attentive because many situations go by unnoticed if you're not watching and understanding, an alarming sound or a parameter that is not coming in adequately, so you need to be attentive, dynamic, because they ask millions of things at the same time, you have to organize your thoughts. (NuNeFD11)

Leadership skills are another aspect these nurses need to put in practice effectively, being able to conduct the team in unpredictable situations, which are considered severe and complex. This nursing characteristic, related to the way the client is perceived, came up in three cases, and in two cases together with communication/ relationship skills.

The patient who stops, shocks, presents a problem for your ability to lead, organize, know what and how to do it. Inspiring confidence in the group, working together, relating well, learning from the team and constituting a team. (NuVFNi16)

Leadership is very important. If you choose a person who does not have a strong arm, who doesn't know how to talk above all. Some people are ignorant, they don't know how to work with the team. That whole indication goes down the tubes. (NuNeMNi20)

Finally, it is considered that nurses need to join technical and meaningful skills to respond to the needs determined by the characteristics related to the way care takes form at technological units.

Being responsible, understanding technology and the patient's view. It's a human being who's isolated from his family. It's not the just the technological side that specifies good nurses at the unit, but the view on the patient's dependence. I can be excellent, see the electro and say that he's having arrhythmia, and I look at the patient's face and don't say good morning. I go there and administer the medication and things may go wrong, not because the monitoring was read the wrong way, but how it reaches the patient. (NuVFNi17)

DISCUSSION

Professionals need skills to observe patients through equipment and develop diagnostic assessments. The professional's connection with the machine permits assessing the symptoms the patient referred at an interface with the machinery[10]. Nurses should be able to understand the machine's language based on their knowledge as, then, parameters are established for the clinical evolution, guiding care. This knowledge needs to be renewed each time a new device in incorporated into care, demanding that nurses adopt a pro-active attitude in the search to update their knowledge[11].

This recycling is required for newcomers and veterans. Despite the newcomers' efforts and interest in learning with a view to safe performance, however, adequate decision making in view of a real situation demands experience, besides specialized knowledge[6]. In this interval, permanent education joins with the time of work to achieve other stages of professional competency.

It is perceived, however, that although this sector requires knowledge, this is not sufficient to perform activities, that is, technique and knowledge are not enough. Other personal characteristics are needed in view of the relation established between environment and technology.

One of the characteristics mentioned, for example, was emotional balance, mainly by veterans. Their experiences regarding coping with death, treatment

failure, contact with the family, tension inherent in care in this environment, justify that they classify these situations as difficult and that, in turn, they demand the ability to deal with emotions.

In this respect, the idea is raised that ICU nursing has contact with emergency situations whose final outcome may be the client's death. Occasionally, these situations arouse feelings of frustration in the nurses, resulting from the fact that the client's life is not maintained, although all available resources are used, something that is stimulated in professional education[12].

Although death is considered an expected event in the ICU environment, it generates suffering in the workers, constituting a stressful factor. This suffering is manifested through feelings of loss, guilt, impotence and inability to maintain clients' lives through their work[12].

It should also be added that the need for precision deriving from technology use makes the ICU environment tense, as any usage error can produce data that interfere in the therapeutics to be established[11]. Hence, the ICU is an adequate place for events related to ideas of risk, emotion, pain and suffering, demanding nursing skills to deal with these tensions and adapt to the requirements of this unpredictable environment's dynamic nature, a place of crises and changes in clients' conditions.

Another characteristic that is underlined in the profile is the enthusiasm about what they do, in line with other studies in which nurses express feelings of satisfaction and gratification as a result of ICU work[4]. As a consequence of their enthusiasm about the type of care, the clients' profile and the technology of this environment, professionals make efforts and are willing to apprehend and deal with it.

In this multiprofessional context, team relationship skills are also important, as their absence can negatively interfere in the quality of client care delivery. Thus, it is highlighted that communication should be constantly stimulated in professionals' work, so as to preserve good relations among members and enhance the health team's commitment[12]. This implies cooperation, task division and shared planning[13].

These personal characteristics gain relevance, supported by the meanings of the environment, client and care constituted based on the SR about technology. In other studies on the theme, however, the elements of the figure type are modified. In the contents of SR about nursing work, for example, while these professionals' personal attributes emerge as the axis that supports the central core of the SR, the team relation is a component. The personal qualities required to work at an ICU were dynamism to deal with the type of client, effort and patient to cope with suffering, anguishing situations and self-esteem to value one's work[4].

From the perspective of leadership in critical care environments, the discussion about the profile is important as well. When asking teachers, nurses and academics about leadership in this context, a set of nursing attributes was outlined, among which the following stand out: ability, ethics, responsibility, teamwork, safety, tolerance, pro-activeness, willingness and calmness[13].

At the interface with the issue under debate, a concern is evidenced with nursing work in intensive care, as experts appoint that the complexity of care, permeated by objectivity and subjectivity and free from risks, demands competences and skills from the professionals working there, constituting an ideal type for this sector. Its relevance rests in patient safety, which is an ethical commitment the professionals assume. Circumstances are observed in which nurses are not prepared for ICU client care, mainly regarding technologies, which arouses the understanding of this theme as proposed here.

The matter of technologies' influence on professional action and on the need for adequate nurses has also been focused on in international research. In one study, which aims to correlate care attributes with technological influences, it is shown that nurses need to get involved in the ethical and moral debate about technology use, as it is believed that technological safety is a complementary part of care practice, demanding technological and care competency[14].

As SR about technology presuppose clients' severity and death risk, nurses also need theoretical-practical knowledge of nursing care as well as machine handling, demanding technical skills as part of the professional profile.

Among these, careful observation should be highlighted. That is the case because instability characterizes the ICU environment. Shifts involve an agitated climate, demanding attention and strict care from the entire team[12]. A constant state of alertness is fundamental at critical units, mainly in situations that, if rapidly identified, lead to treatments that help clients to recover and prevent their death[4].

It is highlighted that ICUs have emerged to see to severe patients, in recoverable conditions, who demanded constant observation and advanced technology use. In that sense, as emergencies are already expected in this environment, as well as a concentration of clients subject to sudden clinical changes, nurses need to identify these changes and intervene readily, being observant, fast and dynamic.

These research results signal that, when the nurses refer to leadership, they mark a thin line between the spaces in and outside the ICU. Apparently, leadership practiced at the ICU is not just any leadership, but entails

a number of predicates. Outside this environment, the leadership profile adjusts to lesser requirements for knowledge and its practical application; as a type of leadership whose supervision is not paramount for activities.

Communication skills stand out in a leader. That is so because they allow professionals to perform their actions through the inter-relation with patients, families, team and institution, and permit conflict mediation[13].

One question about care in these contexts, based on different studies, refers to the possibility that care is directed by information from technological devices only, without observing the data that result from client observation. In this perspective, although technology contributes to attend to clients' needs, provides a precise diagnosis and grants the team safety, it can contribute to a dehumanization process, making relations cold and distant and clients invisible[15].

Thus, regarding this profile aspect, it is underlined that the nurses need to construct a clinical image of patients for the sake of decision making, based on the identification of the different signs coming from monitors, ventilators, tests, clinical assessment, without forgetting that it is the patient who produces the information and expresses his needs through articulation with the devices, indicating the importance of balance[16]. Moreover, it is not technology itself that produces dehumanization, depersonalization, but the way individual technologies operate in the user's specific contexts[17].

This characteristic of the nursing figure type seems to be an element of the SR's numb zone. This assertion is based on the fact that, when talking about the situations in which machine information alone guides care, the nurses never refer to themselves, but always talk about other colleagues. The numb zone is cognition or beliefs the subject does not express in normal production conditions, as they can conflict with a certain group's moral values or standards[18].

This can be explained by the identity of nurses' knowledge about care when instructed by a strongly humanistic discourse, in which the client would be the center of attention and define care. If, in this environment, the machine and the knowledge/science it expresses dominate nursing knowledge/science, and if this defines/determines nursing action, the nurses exclude themselves from this discussion and talk about others than themselves.

In this discussion, it needs to be taken into account that this research was accomplished at a public hospital, in the context of a specialized ICU. The results described here refer to the situational context under analysis, related with the characteristics of the subjects who participated in this context. Some of the technical attributes the nurses need for intensive care, however, are also supported by other studies. In one of them, in the attempt to restructure ICU nurses' admission training, their expected profile was outlined, comprising: frequent recycling, dynamism, application of ethical principles, reflection about practice, commitment and responsibility, being a good communicator, negotiator and leader[19]. In a research on ICU nursing work, the demanded professional attributes are competency associated with theoretical-practical knowledge, discernment about priorities, maintaining good relationships and union[4].

It was verified that the results of other studies signal differences in the composition of the figure type, with variations in the characteristics of personal and professional qualities, including the addition of others that were not evidenced in this study. The information they transmit, nevertheless, in combination with the present results, contributed to reinforce the argument that ICU nursing work, involving technological and human differentials, reveals the need for specific attributes characteristic of this scenario.

FINAL CONSIDERATIONS

The way nurses understand the environment in contexts marked by the presence of technology leads the construction of the idea about technology. This, in turn, conditions a professional profile to work in these sectors.

Thus, the importance of selecting nurses for professional practice in this scenario is highlighted, instead of simply accepting these professionals out of mere availability or because they want to work. The process aims to guarantee that nursing team members are qualified people who are capable of working together, delivering excellent treatment.

As a result of the non-valuation of the figure type when distributing human resources across the hospital, nurses who at that moment do not join the requisites for safe and high-quality work end up becoming part of the ICU. Novel nurses, for example, do not possess all necessary characteristics yet to work at this sector, including technical knowledge for technology management, entailing a peculiar experience of work in this context.

The possible influence of the lack of profile comprise the sub-use of technology in care, as well as the non-founded use, immediately affecting clients' conditions. It is considered that nursing practice at an ICU requires skills, knowledge and judgments, i.e. nurses' clinical competency is extremely relevant, which therefore demands the assessment of their cognitive and psychomotor skills, whether they are newcomers or veterans.

SR research refers to the analyzed groups, as these

representations respond to the characteristics of the groups that construct them. Hence, the validity of the discussed results is internal, without room for generalizations. Nevertheless, further research is needed to explore ICUs at public and private institutions, increasing the number of participants, with a wider range of results, and further parameters for comparison that permit exploring other branches in discussions. Thus, broader considerations about intensive care nurses' profile become possible. Anyway, human resource sectors in hospital should access this information to support nursing allocations in these contexts.

Finally, this discussion arouses reflections on quality in professional practice, feeding the art of nursing and indirectly influencing and adding value to the science of the profession.

REFERENCES

1. Silva RC, Ferreira MA. Representações sociais dos enfermeiros sobre a tecnologia no ambiente da terapia intensiva. Texto & Contexto Enferm. 2009;18(3):489-97.
2. Pinho LB, Santos SM. Dialética do cuidado humanizado na UTI: contradições entre o discurso e a prática profissional do enfermeiro. Rev Esc Enferm USP. 2008;42(1):66-72.
3. Inoue KC, Matsuda LM. Dimensionamento de pessoal de enfermagem em Unidade de Terapia Intensiva para adultos. Acta Paul Enferm. 2010; 23(3):379-84.
4. Silva IA, Cruz EA. Trabalho da enfermeira intensivista: um estudo da estrutura das representações sociais. Rev Esc Enferm USP. 2008;42(3):554-62.
5. Wagner W. Sócio-gênese e características das representações sociais. In: Moreira ASP, Oliveira DC, organizadoras. Estudos interdisciplinares de representação social. Goiânia: AB; 1998. p. 3-25.
6. Benner PE. From novice to expert: excellence and power in clinical nursing practice. Menlo Park, Calif.: Addison-Wesley; c1984.
7. Balsanelli AP, Cunha IC, Whitaker IY. Estilos de liderança e perfil pessoal e profissional de enfermeiros em Unidade de Terapia Intensiva. Acta Paul Enferm. 2008;21(2):300-4.
8. Padilha KG. Ocorrências iatrogênicas em Unidade de Terapia Intensiva (UTI): análise dos fatores relacionados. Rev Paul Enferm. 2006;25(1):18-23.
9. Jodelet D. Culture et pratiques de santé. Rev Enferm UERJ. 2008;16(3):427-39.
10. Vargas MA, Ramos FR. Tecnobiomedicina: implicações naquilo e daquilo que a enfermagem faz em terapia intensiva. Texto & Contexto Enferm. 2008;17(1):168-76.
11. Silva RC, Kaczmarkiewicz CC, Cunha JJ, Meira IC, Figueiredo NMA, Porto IS. O significado da tecnologia na assistência de enfermagem em pós-operatório imediato de cirurgia cardíaca. Rev SOCERJ. 2009;22(4):210-8.
12. Leite MA, Vila VS. Dificuldades vivenciadas pela equipe multiprofissional na unidade de terapia intensiva. Rev Latinoam Enferm. 2005;13(2):145-50.
13. Gelbcke FL, Souza LA, Dal Sasso GM, Nascimento E, Bulb MBC. Liderança em ambientes de cuidados críticos: reflexões e desafios à Enfermagem Brasileira. Rev Bras Enferm. 2009;62(1):136-9.
14. Noh CH, Arthur D, Sohng KY. Relationship between technological influences and caring attributes of Korean nurses. Int J Nurs Pract. 2002;8(5):247-56.
15. Silva RC, Ferreira MA. A dimensão da ação nas representações sociais da tecnologia no cuidado de enfermagem. Esc Anna Nery Rev Enferm. 2011;15(1):140-8.
16. Beltrán-Salazar OA. La práctica de enfermería en cuidado intensivo. Aquichan. 2008;8(1):50-63.
17. Barnard A, Sandelowski M. Technology and humane nursing care: (ir)reconcilable or invented difference? J Adv Nurs. 2001;34(3):367-75.
18. Menin MS. Representação social e estereótipo: a zona muda das representações sociais. Psicol Teor Pesqui. 2006;22(1):43-51.
19. Bucchi SM, Mira VL. Reelaboração do treinamento admissional de enfermeiros de Unidade de Terapia Intensiva. Rev Esc Enferm USP. 2010;44(4):1003-10.