Evidence-based practice: competencies between novice nurses and preceptors in a teaching hospital

Prática baseada em evidências: competências entre enfermeiros novatos e preceptores em hospital de ensino

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Objective: to verify competencies for the evidence-based practice between novice nurses and their preceptors. **Methods**: cross-sectional observational study consisting of non-probabilistic sampling aimed to reach the maximum number of participants. We conducted structured interviews using the Evidence-Based Practice Questionnaire to verify competencies. **Results:** 83.1% of the population (n=104 nurses) participated in the research, most of them were women and young adults. On average, the competencies for evidence-based practice (novices = 4.8, preceptors = 5.0) were moderate. Both groups believe that the use of evidence in practice is essential. However, the critical evaluation of evidence in the daily routine has been little recurrent among them. Professionals found difficulty in setting time at work to seek evidence, especially the beginners (p=0.05). Preceptors presented better computer skills to search for evidence (p=0.043). **Conclusion:** in general, competencies for evidence-based practice were similar among novice nurses and preceptors.
Descriptors: Evidence-Based Nursing; Evidence-Based Practice; Hospitals, Teaching.

Objetivo: verificar competências para a Prática Baseada em Evidências entre enfermeiros novatos e seus preceptores. **Métodos**: estudo observacional, transversal, constituído por amostragem não probabilística a fim de se alcançar o número máximo de participantes. Foram realizadas entrevistas estruturadas utilizando-se Evidence-*Based Practice Questionnaire* para verificação das competências. **Resultados:** participaram 83,1% da população (n=104 enfermeiros), maioria de mulheres, jovens adultas. Em média, foram moderadas as competências para Prática Baseada em Evidências (novatos = 4,8; preceptores = 5,0). Ambos acreditam ser fundamental a utilização de evidências na prática. Entretanto, a avaliação crítica das evidências no cotidiano de atuação tem sido pouco recorrente entre eles. Definir tempo no trabalho para buscar evidências apresentou-se como dificuldade, sendo maior entre novatos (p=0,05). Preceptores apresentaram melhor habilidade em informática para busca de evidências (p=0,043). **Conclusão:** em geral, as competências para Prática Baseada em Evidências foram similares entre enfermeiros novatos e preceptores.
Descritores: Enfermagem Baseada em Evidências; Prática Clínica Baseada em Evidências; Hospitais de Ensino.

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Introduction

Research as the guiding thread of nursing care is, above all, a transforming praxis[1]. It has been recognized as essential to the nursing practice because it allows the acquisition of knowledge and the evaluation of the conducts, offering greater safety to the decision making[1-2]. The use of research in practice stimulates the increase of technological quality and knowledge of this profession, in which the evidence-based practice is crucial[3-4]. However, using research to modify practices still is as a construct for nursing and a worldwide challenge[1-5].

Attention is drawn to the fact that nursing care, both in research and in action, goes beyond the positivist determination for its performance. It is permeated by aspects such as culture, subjectivities, communication, among other human needs in health and the caring process. This entails methodological peculiarities to the nursing investigations, not being exclusive to the experimental studies[1-2].

Among nursing surveys produced in Latin America and the Caribbean, 98.0% are descriptive, with weak potential of transference to practice[2,5]. It is urgent to carry out investigations to support decision-making and to identify the best evidences to incorporate[5]. There have been international initiatives to integrate research into nursing practice since the 1970s, but they are still incipient in the context of Latin America and the Caribbean, as pointed by a narrative review on models for the implementation of evidence-based practice in hospital nursing[4].

Contextualized to the Unified Health System, the higher education institutions and the health services cooperate, in the Brazilian reality, to carry out training and research practices. In this context, public teaching hospitals have traditionally been considered as propitious scenarios for teaching-service integration[4,6]. In public teaching hospitals, nurses actively participate in different didactic-pedagogical activities, contributing to learning through practice and contact with the dynamics of services[6].

Therefore, these nurses should approximate to the evidence-based practice. This action tends to reflect beneficially to qualify care, increase patient safety and support hospital cost control[3-4]. Analyzing the teaching-service integration to strengthen this practice is interesting for current scientific production - mainly in Latin America and the Caribbean, where training and teaching for the evidence-based practice are few discussed, as evidenced by an integrative review on the theme[7].

Above all, in the scenario of teaching-service integration in hospitals, nurses with different levels of proficiency, from beginners to those with high expertise, work side by side. Because it is a training space, the work of novice nurses is expressive in the daily life of public teaching hospitals. These nurses are the ones starting their career or who do not have previous experience and are having their first contact with an area or specialty[8].

In this perspective, the preceptorship in Hospital Nursing, whether in postgraduate, residency programs or supervised hospital internship during the last year of the nursing undergraduate course, is strategic to develop the skills of novice nurses[7-9]. However, preceptorship in nursing has been little discussed in the literature[9].

However, it is conceived as an excellent resource for professional development in the face of the gaps that novice nurses have[8]. So, it is hoped that the nurse preceptor has theoretical, didactic and political knowledge so that it is possible to offer a training for the critical judgment through the contemporary challenges of the practical-assistance context[8-9]. For this reason, preceptors must be prepared for the evidence-based practice.

For the present study, the definition of competence consists of the articulation between the concepts: Knowledge, Attitudes and Practices, being knowledge the cognitive domain, related to understanding; attitude, the affective domain, the internalization of values; and practice, the mastery of skills, handling and creation[10]. In view of this, we ask: What

are the competencies for evidence-based practice between novice nurses and their preceptors working in a teaching hospital?

The proposal of the Academic Center of Evidence-based Practice of the University of Texas is added for the understanding of competencies for Evidence Based Practice. In this proposal, competence is given by the measurement of specific skills, based on the identification and critical analysis of relevant scientific publications in order to transform the knowledge produced through existing research or the conduction of new specific research in safe information for nurses' decision making[4]. In this context, the present study aimed to verify competencies for the evidence-based practice of novice nurses and their preceptors.

Methods

This is a cross-sectional, observational study conducted in a large general public and teaching hospital (332 beds) that is a macro-regional reference for high complexity care of the South Triangle region of Minas Gerais, Brazil. Non-probabilistic sampling was adopted in order to reach the maximum number of participants, considering the interest of this work in recognizing the phenomenon in the community of nurses working in the public teaching hospital that should base their practice on research.

Two interest groups were surveyed, namely novice nurses (G1), who are members of the residency and supervised hospital programs; and preceptor nurses of these programs (G2). Inclusion criteria for G1 were being a novice nurse enrolled and participant in the public teaching hospital residency programs or in a supervised hospital internship; and for the G2, being a care nurse registered in the programs to work as a preceptor. In both groups, those who were on vacation or in leave during data collection were excluded, as well as preceptor nurses in managerial positions/activities.

The survey of the population occurred through a list provided by the Directory of Academic Registra-

tion and Control of the university linked to the public teaching hospital and responsible for the management of nursing residency programs and supervised hospital internships. During the data collection, there were 56 novice nurses (34 residents and 22 in supervised hospital internship) and 72 preceptors, totaling 128 nurses.

Data were collected from December 2016 to April 2017, in different shifts (morning/evening/night), in appropriate environment in the public teaching hospital, for 20 minutes. We used a self-administered, semi-structured questionnaire, the Evidence-Based Practice Questionnaire (EBPQ), adapted for Brazil[11], presenting reliability and internal consistency by Cronbach's alpha coefficient in all domains (0.91-0.68) and a satisfactory intraclass correlation coefficient (0.90).

This instrument, the EBPQ, has 24 items scored on a seven-point Likert scale. The score is calculated by adding the values of the answers to each question, totaling 168 points - a higher score indicates competences more favorable to this practice. Its domains encompass Practice (six questions or 42 points in total); Attitudes (four questions or 28 points in total); Knowledge and skills (14 questions or 98 points in total)[11]. Also, questions related to the demographic aspects of the participants were added to the EBPQ instrument, namely age (full years) and sex (female, male).

For analysis, we organized a database in Excel® by double typing. In the identification of inconsistencies, the questionnaires were accessed to ascertain and ensure the adequate completion of the database's information. The data were transposed to the Statistical Package for Social Sciences program, version 21.0.

The numerical variables were analyzed by descriptive statistics, central tendency and dispersion measures (mean, median = md, standard deviation = sd and confidence interval 95%=CI$_{95\%}$), and the categorical variables by absolute and relative frequencies. In order to compare the differences between the groups of novice nurses (G1) and preceptors (G2) in terms of competencies, the analyzes were made in ac-

cordance with EBPQ: in its items, its dimensions and total instrument score (adding up the values of the answers).

The results were submitted to Student's t test when they satisfied the assumptions of independence, homoscedasticity and normality of the variables. The normality assumption was analyzed by the Kolmogorov-Smirnov test (n> 30). The equivalence of variance (homoscedasticity) was verified using the Levene test. For variables that violated the criteria, the non-parametric Mann-Whitney test was applied. The level of statistical significance adopted for all tests was 5%.
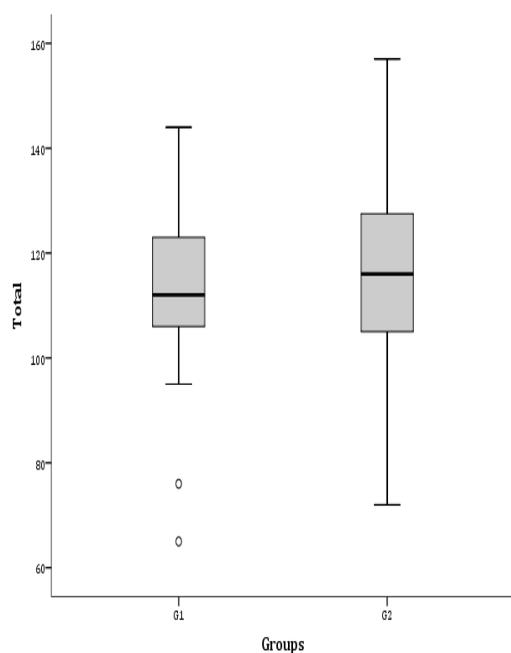
Regarding the ethical aspect, resolution 466/2012 was respected, and this research was approved by the Research Ethics Committee of the Federal University of Triângulo Mineiro, under the opinion no. 1,733,770 and the Approval Certificate no. 52643416,0,0000,5154.

Results

A total of 31 (73.2%) novice nurses and 63 (87.5%) preceptor nurses participated in the study, reaching a percentage of 81.3% of respondents of the 128 nurses. As for the novice nurses, the mean age was 26.3 years (minimum of 22 years, maximum of 49 years and standard deviation of 4.8 years). Among the preceptors, the mean age was 35 years (minimum of 26 years, maximum of 59 years and standard deviation of 6.7 years). With regard to sex, there were six male novice nurses (14.6% of the total number of novices) and nine male preceptor nurses (14.3% of the total preceptors).

Both groups defined their knowledge, attitudes and practices with scores indicating competencies more conducive to evidence-based practice. Given the maximum possible of seven points of the Likert scale, the overall average of the dimensions for novice nurses was 4.8 (95% CI=4.7, 5.0) and for preceptors, 5.0 (95% CI=4, 8, 5.2). In the comparison of the total score obtained by the mean of the sum of the EBPQ dimensions, there were no significant differences betwe-

en the group of novice nurses and preceptor nurses (mean G1=113.7, md = 112, sd=15.7; mean G2=116.7, md = 116, sd=18.2) (Figure 1).

Student's t-test p = 0.390. Novice nurses (G1); Preceptor nurses (G2)

Figure 1 – Boxplot comparison between competencies for evidence-based practice between novice nurses and preceptor nurses in public teaching hospital as a global result

Regarding the dimension "Practice" of the EBPQ, the action "critically evaluating evidence" had the lowest score in both groups (mean G1=4.2, mean G2=4.4, p=0.382). The practice of critically evaluating the literature found has been less frequent in these groups. On "Attitudes", "setting working time" was presented with lower scores in both groups, with a significant difference among the novice nurses. Preceptor nurses have better defined the time for evidence in their work agenda (mean G1=3.5, mean G2=4.4, p=0.05). It is noteworthy that for both groups, the evidence-based practice is crucial to professional practice because it was the item that obtained the highest score (mean G1=6.5, mean G2=6.2, p=0.691). In the dimension "Practice", the highest average score was among beginners, 4.9 (95% CI=4.7, 5.3), compared to

preceptors, with 4.8 (95% CI=4.6, 5.1). For "Attitudes", among novice nurses, the mean was 5.2 (95% CI=4.9, 5.4) and for preceptors, 5.3 (95% CI=5.1, 5.6) (Table 1).

As for the "Knowledge", among novice nurses, the average was 4.5 (95% CI=4.3; 4.8) and that of preceptors was 4.7 (95% CI=4.5, 4.9). Translating clinical demands into research questions (G1=3.9, mean G2=4.4, p=0.067), raising evidence (mean G1=3.9, mean G2=4.4, p=0.144), research skills (G1 mean=4.1, G2 mean=4.5, p=0.215) and monitoring skills (mean G1=4.2, mean G2=4.3, p=0.837) obtained a lower score between both groups. On the other hand, the computer skills to search for evidence was better among preceptor nurses compared to the novice ones (mean G1=4.4, mean G2=4.9, p=0.043) (Table 2).

Table 1 – Comparison between competencies for the evidence-based practice of novice nurses and preceptor nurses in a public teaching hospital according to the dimensions Practice and Attitude

Aspect[a]	Novice nurses			Preceptor nurses			p
	Mean	Median	Standard deviation	Mean	Median	Standard deviation	
Practice							
Formulating question	4.9	5	1.4	4.8	5	1.6	0.647
Search for relevant evidence	5.2	5	1.2	4.9	5	1.4	0.271
Critically evaluating evidence	4.2	4	1.4	4.4	4	1.3	0.382
Integrating evidence	5.2	5	1.3	4.9	5	1.5	0.555
Evaluating results	5.2	5	1.6	4.9	5	1.6	0.350
Sharing knowledge	5.2	5	1.5	5.3	6	1.6	0.778
Total[b]	29.8	29	6.1	29.2	29	6.7	0.619**
Attitudes							
Setting time at work	3.5	3	1.5	4.4	4	1.5	0.050
Being open to discussions	5.7	6	1.4	5.4	6	1.8	0.609
Believing it is crucial	6.5	7	0.7	6.2	7	1.6	0.691
Modifying practice	5	5	1.5	5.4	6	1.5	0.158
Total[b]	20.7	20	2.6	21.4	22	4.7	0.061**

[a]Summarized sentences, adapted from the original questionnaire; [b]Score by summing the values of the answers; **Student's t-test

Table 2 – Comparison between competencies for the evidence-based practice of novice nurses and preceptor nurses in a public teaching hospital according to the dimension Knowledge

Aspect[a]	Novice nurses			Preceptor nurses			p
	Mean	Median	Standard deviation	Mean	Median	Standard deviation	
Knowledge							
Research skills	4.1	4	1.2	4.5	5	1.3	0.215
Computer skills	4.4	4.5	1.5	4.9	5	1.2	0.043
Monitoring skills	4.2	4	1.1	4.3	4	1	0.837
Formulating questions	3.9	4	1.1	4.4	4	1.2	0.067
Knowing search sources	4.5	4.5	0.9	4.7	5	1.2	0.364
Identifying practice gaps	4.5	4.5	1.1	4.8	5	1.1	0.174
Raising evidence	3.9	4	1.1	4.4	4	1.4	0.144
Analyzing evidence critically	4.1	4	1.2	4.6	5	1.2	0.107
Determining validity	4.5	5	1.1	4.6	5	1.1	0.870
Defining applicability	4.7	5	0.9	4.7	5	1.5	0.656
Capable of applying knowledge	4.9	5	1	4.8	5	1.1	0.685
Sharing knowledge	5.1	5	1.2	5	5	1.2	0.693
Spreading new ideas	4.9	5	1.2	5	5	1.2	0.978
Reviewing one's own practice	5.3	5	1	5.4	5	0.9	0.886
Total[b]	63.3	63.5	10.1	66.1	67	11.4	0.177**

[a]Summarized sentences, adapted from the original questionnaire; [b]Score by summing the values of the answers; **Student's t-test

Discussion

The present study has limitation regarding generalizations since the participation of the population of interest was relevant, but it is a convenience sample, reflecting the skills of novice nurses and preceptors of a specific scenario. Another aspect is related to the EBPQ instrument because it is completed by self-reported information. Therefore, it should be complemented by objectively measured information[12].

The results present the sociodemographic aspects of the participants and it was possible to infer that the performance of preceptors in nursing could be in accordance with the mentoring in evidence-based practice in the contexts of teaching-service integration. One can add that novice nurses had better scores on the "Practice" dimension, despite lower scores on "Knowledge" and "Attitudes" than preceptors. In general, ignoring the search for the best evidence, understanding the results of researches and evaluating them critically, as well as applying them in practice to generate propositional changes have been pointed out as difficulties for the evidence-based practice among nurses in different countries[13-15].

Spanish and Ibero-American nurses had a mean total score of 5.02 (95% CI: 4.89, 5.14), with academic level (p<0.001) and professional category (p=0.001) associated with competences for evidence-based practice[16]. These results are similar to the present study.

When Eastern European nursing students evaluated whether their training scenarios enabled effective teaching of this practice, they reported on shortcomings in this approach, such as difficulties in identifying relevant evidence to support changes in practice, including guidance on how to use computer resources to access scientific databases of nursing and Boolean descriptors, besides the mentioned difficulties[17]. The results of the present study indicate a similar situation, since the computer skills to search for evidence of the novice nurses were inferior to those of their preceptors.

The teaching-service integration has been presented as crucial in the nurses training process[18]. However, there are still gaps between what nurses know, by the production of scientific knowledge in nursing, and what has actually been done in the act of caring[18-19]. In this sense, mentorships have been suggested as keys to implementation of the evidence-based practice with nurses[13,18-19].

A survey among nurses from multiple health services in the Bahamas (Caribbean) identified the need for additional training for evidence-based practice, and 85.2% of them stated that the mentoring performed by nurses with experience in research methods is relevant to practice[19]. In five university hospitals in Finland that rely on this initiative to guide the evidence-based practice, preceptor nurses often carried out this activity. This research evidenced that the readiness of the mentor and his or her performance close to the other nurses in the hospital context positively influence the advance of the competences for evidence-based practice in these teaching-service integration scenarios[20].

Worldwide, there have been few studies that aim to identify competencies for evidence-based practice[13]. The contributions of the present study are shown by the eminent need to discuss and recognize this practice in Latin American and Caribbean countries, where discussions on the subject are incipient. They also support discussions on nursing training, including extending preceptors' competencies to evidence-based practice. In addition, they corroborate future implications that support mentoring programs in this area. We suggest the development of similar research in public teaching hospitals in Brazil, which can also amplify aspects to be analyzed, such as training and length of service of nurses.

Conclusion

In general, competencies for evidence-based practice were similar among novice nurses and their preceptors. Although both groups believe that professional practice is guided by the evidence, the critical evaluation of the evidence in the daily practice has been little recurrent among them. Statistically significant differences were found for the following aspects: computer skills for searching for evidence and setting time at work to search for evidence, in which novice nurses reported lower performance.

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Collaborations

Camargo FC collaborated with the project and design, analysis and interpretation of data, and writing of the article. Garcia LAA, Rosinha GF and Souza Junior RM contributed with data analysis, interpretation of data and writing of the article. Pereira GA and Iwamoto HH collaborated with a relevant critical review of the intellectual content and approval of the final version to be published.

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