

ANALYSIS OF THE CARE PROCESS STEPS IN PATIENT WITH CENTRAL CATHETER¹

Juciana Isabel da Silva*
Sandra Maria Cezar Leal**
Betina Bittencourt***
Karin Viegas****

ABSTRACT

Objective: to analyze the Steps of the Central Venous Catheter Patient Care (CVCPC) process steps in order to identify potential flaws in the prevention of bloodstream infection in the intensive care unit. **Method:** Failure Analysis and Effects Method was used. Study carried out in the Intensive Care Units of a large hospital in the city of Caxias do Sul. Nine nursing professionals composed the evaluation group. For the calculation of risk, the severity, the probability of occurrence and the possibility of detection in each evaluated item were defined. **Results:** the results indicated nonconformities such as lack of indication criteria and risks related to barrier protection and catheter insertion and maintenance. **Conclusion:** it is considered that the team was committed to the qualification of the CVCPC process. However, it is necessary to implement strategies to promote actions that prevent the occurrence of potential failures.

Keywords: Infection Control. Central Venous Catheters. Nursing care.

INTRODUCTION

Infections, related to health care assistance, have been increasing, especially within hospitals. Among them, we highlight the Bloodstream Infections (BSI) of patients submitted to invasive procedures, such as, and mainly, the insertion of intravascular devices. In Intensive Care Units (ICUs), this procedure is common, due to the severity of patients who require the use of continuous infusions, intravenous medications, hemodialysis catheters, invasive pressure monitoring, total parenteral nutrition (TPN), among others⁽¹⁾.

In an ICU, professionals need to have agility in performing care. However, at some moments, the procedures involve several professionals of the health team, which favors the non-adherence to the protocols of infection. In addition, there are many invasive procedures, making professionals, at certain times, prioritize the performance of the procedure to the detriment of aseptic techniques⁽²⁾.

Infections of Central Venous Catheters (CVC) are also related to their length of stay, and routine exchange is not recommended. Hospital institutions should have defined criteria, with protocols related to their insertion,

exchange and withdrawal^(3,4).

Currently, measures for the prevention and control of BSI are established. However, infection rates have not decreased. This evidences the need to qualify the practice, especially of health professionals involved in critical patient care, as well as hand hygiene as one of the primary measures in the prevention of BSI^(5,6).

The problematization of this study stems from the finding of high BSI rates in the ICUs of a large hospital in the city of Caxias do Sul (RS). It is noteworthy that, in the period from January to June 2013, the mean percentage of infection was 68.3%, of which 26.24% correspond to BSI.

Therefore, this study is justified by the need to adopt educational measures that promote the reduction of BSI. In this context, it is questioned: what are the shortcomings in the care process of patients with central venous catheters that can trigger the risk of infection?

This study aims to analyze the steps of Central Venous Catheter Patient Care (CVCPC) process steps, identifying potential failures for the prevention of BSI in ICUs. The specific objective was to propose interventions for each potential failure in the prevention of BSI.

*Nurse. Master's in nursing, Pompéia Hospital. Cidade, Caxias do Sul, RS, Brazil. E-mail: jucianaisabel@gmail.com ORCID ID: <https://orcid.org/0000-0002-5846-2799>.

**Professor/Nurse. Doctorate in Nursing, University of Vale do Rio dos Sinos/UNISINOS. Porto Alegre, RS, Brazil. E-mail: sandral@unisinos.br ORCID ID: <https://orcid.org/0000-0003-4611-0988>.

***Nurse Porto Alegre Hospital of Clinics/HCPA. Porto Alegre, RS, Brazil. E-mail: bittencourtbetina@gmail.com ORCID ID: <https://orcid.org/0000-0003-3774-986X>.

****Professor/Nurse. Doctorate in Biomedical Gerontology, Federal University of Health Sciences of Porto Alegre/UFCPA. Porto Alegre, RS, Brazil. E-mail: kviegas@gmail.com ORCID ID: <https://orcid.org/0000-0002-2546-9281>.

MATERIALS AND METHODS

This is a study that used the Failure and Effect Analysis Method⁽⁷⁾ as a strategy to qualify Central Venous Catheter Patient Care (CVCPC) process for the Prevention of Bloodstream Infection (BSI) in Intensive Care Units (ICUs) of a large hospital located in the city of Caxias do Sul/RS.

The participants were the Evaluation Group (EG), composed of nine professionals of the nursing team, who work in the ICUs under study, of which seven are nursing technicians and two, nurses. The inclusion criteria were: being part of the nursing team, working in one of the ICUs and being in functional activity. Those who were on legal leave during the study period were excluded.

Data collection and analysis were performed according to the Failure and Effect Analysis Method, which aims to detect known or potential failure modes during a process, enabling preventive actions to be planned before this process reaches the final customer⁽⁷⁾.

The data were collected from June to August 2014. Initially, the researcher developed the Central Venous Catheter Insertion and Maintenance Flow, according to the guidelines of the Guidelines for Prevention of Primary Bloodstream Infection and Prevention of Catheter-Related Infections⁽⁸⁾ established by the Center for Disease Control and Prevention (CDC)⁽⁶⁾ and the Infusion Nursing Society Brasil (INS Brazil)⁽⁹⁾. The flow consisted of two steps: 1st) Criteria for indication of CVC; 2nd) Maintenance of the CVC, and the description of each one integrated the Steps of the Central

Venous Catheter Patient Care (CVCPC) process steps, presented in Table 4.

With the participation of the Evaluation Group, the risk of nonconformities was analyzed, following the Central Venous Catheter Insertion and Maintenance Flow and the CVCPC process steps. Three meetings were held lasting approximately one hour each. In the first one, the purpose of the study and ethical aspects were presented, doubts were clarified, and the participants signed the TCLE and the schedule of the next meetings was established. The analysis of each CVCPC process step was performed in the following two meetings, and in the third meeting only five members of the EG, two nurses and three nursing technicians attended. The reason for the absence of the other participants was related to the need to adjust the work scale. It is worth mentioning that the reduction in the number of members did not interfere in the analysis because the participation of the EG was positive in fulfilling the purpose of analysis of the CVCPC steps and to identify potential failures for the prevention of BSI in the ICUs with propositions of interventions for each failure prevention of BSI.

For the data analysis, each CVCPC process step was calculated by the risk of each item as: severity (S - Severity Scale), probability of occurrence (O) and possibility of detection (D). For this research a specific Scale of Severity was adapted⁽⁷⁾, regarding the CVCPC process steps, according to the Flow of Insertion and Maintenance of the Central Venous Catheter, totaling, finally, five classification standards with their respective scores (Table 1).

Table 1. Severity scale of the potential effects of nonconformities, related to the CVCPC process steps - Caxias do Sul/RS, 2014.

Severity	Meaning
1	There is no effect on patient care.
2	The effect on patient care is insignificant, and it does harm to the patient.
3	The effect on patient care is mild and may cause mild injury.
4	The effect on patient care is moderate and can cause moderate damage.
5	The effect on patient care is significant and can cause serious harm.

Source: Adapted from MORAES (2014)⁽⁷⁾

In order to verify the occurrence (O), we used the Report of Care Indicators of the study institution, which reports data collected between

March and November of 2013. The mean hospitalizations/month in the ICUs was 27.8 and the permanence was 9.6±2.95 days. In the same

period, 212 risks were reported, of which 155 were reported for accidental CVC losses and 41 for hospital infections. The mean number of nonconformities was 45.9, that is, each patient had at least 1.6 nonconformities that could have caused some damage.

We used the probability scale, adapted (7) to analyze the probability of occurrence (O) of nonconformity. This classification (Table 2) assisted in the identification of how much it is possible to fail in the CVCPC steps, being one of the factors for the evaluation of the risk.

Table 2. Scale of probability of occurrence of nonconformities, referring to the CVCPC process steps.

Occurrence	Meaning
1	Remote or improbable.
2	Small chance of occurrence.
3	Moderate occurrence.
4	Frequent occurrence.
5	High occurrence.

Source: Adapted from MORAES (2014)⁽⁷⁾

The classification of the probability of fail detection (D) of nonconformity was established by an adapted Likert scale, with values from 1 to

10, and the greater the chance of detection of the fail, before causing some impact on the assistance, the lower the assigned value (Table 3).

Table 3. Probability scale, referring to the CVCPC process steps.

Fail Detection	Meaning
1	It will almost certainly be detected. There is an effective review system
2	Very high probability of detection. There are automated process controls.
3	High probability of detection. There are reliability programs in implantation or training.
4	Moderate chance of detection. There is no formal review program. Depends on human resource.
5	Average chance of detection. There is no formal program. Protocols in preparation.
6	There is some probability of detection. There are few controls in the process.
7	Low probability of detection. Performed random audit.
8	Probability of detection very low. It depends entirely on the operator and there are no established standards.
9	Remote detection probability. Reaction when problem is in progress.
10	Detection almost impossible. Total lack of standardization and based on individual judgment.

Source: Adapted from Moraes (2014)⁽⁷⁾

For the analysis of the risk index (R) calculation, the values of the severity (S), probability of occurrence (O) and possibility of detection (D) we multiplied ($R = G \times O \times D$). The (R) value was calculated and classified according to the risk index⁽⁷⁾: a) low risk, values from 1 to 63; b) medium or moderate risk, values from 64 to 187; c) high risk, values from 188 to 250. After the risk calculation, the educational actions were defined for each nonconformity that the EG defined during the research.

This research was approved by the Ethics and Research Committee of the Vale do Rio dos

Sinos University and by the Institution under study under the number 491,473. All participants signed the Free and Informed Consent Form before starting the research.

RESULTS

Table 4 presents the description of the Central Venous Catheter Patient Care (CVCPC) process steps, developed by the researchers according to the Guidelines for Prevention of Primary Bloodstream Infection, Prevention of Intravascular Catheter-Related Infections⁽⁸⁾ established by the Center for

Disease Control and Prevention (CDC)⁽⁶⁾ and INS Brazil⁽⁹⁾.

Table 4. Central Venous Catheter Patient Care (CVCPC) process steps, 2014.

Step 1 Criteria for indication of CVC	<ul style="list-style-type: none"> - Installed or predicted hemodynamic instability. - Use of vasopressor medication. - Use of total parenteral nutrition. - Vascular difficulty for peripheral venipuncture. - Administration of hypertonic or irritative solutions (pH<5 or >9) for peripheral veins. 	
Step 2 CVC Insertion and Maintenance	Phase 1 Barrier protection	<ul style="list-style-type: none"> - Professional and auxiliary paramentation. - Hygiene of the hands. - Antisepsis with 0.5% chlorhexidine and wait two minutes for the skin to dry spontaneously. - Trichotomy, when necessary, with a tricotomizer or scissors. - Use of large sterile fields. - Material dispensed properly by SMC and pharmacy. - Appropriate equipment and infrastructure.
	Phase 2 CVC insertion	<ul style="list-style-type: none"> - Choice of catheter (lumen size). - Selection of the professional who will perform the procedure. - Positioning of the patient in the ICU bed. - Hygienization of the hands and paramentation of the doctor and his assistant (nurse or nursing technician). - Preparation of skin for puncture. - Choice of puncture site. - Material dispensed properly by SMC and pharmacy. - Catheter quality. - Puncture site. - Number of attempts. - Position of the patient in the bed. - Contamination of the catheter during the procedure.
	Phase 3 Catheter maintenance	<ul style="list-style-type: none"> - Sanitize hands before handling catheter. - Evaluate daily the dressing. - Evaluate the possibility of daily catheter removal. - Protect the dressing during bathing. - Perform disinfection of the infusion routes with three circulatory movements before administering medication. - Change the cap every time the circuit is opened. - Change equipment, stopcock and extender every 72h, solutions every 24h and blood components every 4h. - Perform asepsis of the bottles before administering medication. - Change CVC dressing every 48 hours. - Prioritize the use of transparent material (stopcock and extensor and protector) and valved. - Appropriate staffing.

Source: Research data (2014)

The prognosis of nonconformities followed the flow and the insertion and maintenance steps of Central Venous Catheter. Each step was analyzed, and the risk index of nonconformities was identified. With the definition of risk, the

effects and potential causes for the occurrence of failure or error, with a direct impact on patient care, were determined. Educational actions were then proposed. Table 5 presents a summary of the analysis of classified nonconformities with

moderate and high risk, as well as proposals for educational actions.

Chart 5. Central Venous Catheter Patient Care (CPCVC) process steps, 2014.

STEP 1 - CVC INDICATION CRITERIA			
PHASE	NONCONFORMITY	RISK	EDUCATIONAL ACTIONS
Phase 1	Lack of indication criteria for CVC.	MEDIUM	a) Create a Standard Operating Procedure (SOP) with the CVC usage criteria. b) Train the medical and nursing staff.
STEP 2 - INSPECTION AND MAINTENANCE OF THE CVC			
PHASES	NONCONFORMITY	RISK	EDUCATIONAL ACTIONS
Phase 1 Barrier protection	Physician does not wait for a minimum of two minutes after chlorhexidine skin asepsis.	HIGH	a) Train the medical and nursing staff. b) Create and implement a skin asepsis protocol before inserting the CVC.
	Trichotomy before inserting the catheter.	HIGH	a) Train the medical and nursing staff. b) Create and implant a skin preparation protocol for insertion of the CVC.
Phase 2 CVC insertion	Difficulty during CVC insertion, causing several puncture attempts by the same professional (more than two).	HIGH	a) Require the presence of the most experienced preceptor or resident when CVC insertion occurs by a resident physician. b) Follow instructions from INS Brazil regarding the number of puncture attempts per professional.
	Inadequate choice of catheter lumens.	MEDIUM	a) Create SOP for the choice of catheter and number of lumens. b) Standardize monolumen catheter. c) Establish a written justification, with authorization from the ICU, to use a catheter with more than one lumen.
Phase 3 CVC maintenance	Daily evaluation for CVC removal.	HIGH	a) To train professionals about the benefits of early CVC removal. b) Establish daily routine for evaluation on the need to maintain the CVC.
	Protection of the dressing during the bath	MEDIUM	a) Standardize the transparent dressing for CVC.
	Lack of asepsis of the stopcock and solution bottles before administering the medication. Not exchanging the stopcock.	MEDIUM	a) Review ICU staffing. b) Review and adapt the flow according to the demand of the materials. c) To train the nursing team regarding the asepsis of stopcock and bottles. d) Standardize routines in all ICUs. e) Establish criteria of supervision of the nurse responsible for the shift.

Source: Research data (2014)

In the analysis of Step 1 - criteria for indication of CVC - the risk was moderate (R=90). It was found that the lack of CVC indication criteria may be related to the fact that health professionals are not clear about their indication. Another potential cause was the lack of experience of the medical professional during the insertion of the CVC. Although not considered a high risk, the Evaluation Group (EG) suggested corrective actions to reduce this index: to create a Standard Operating Procedure

(SOP) with the criteria for insertion of CVC, so that all medical professionals and of nursing follow the same line of reasoning; and to train health professionals about the CVC insertion indication criteria.

Step 2 - Insertion and Maintenance of the CVC - was constituted by three phases: a) using barrier protection, b) by the insertion of the CVC and c) by the maintenance of the CVC.

In Phase 1 - use of barrier protection -, the nonconformities were identified as high risk: lack of

professional knowledge about the time of action of the standardized antiseptic in the institution (minimum time of two minutes after skin asepsis with gluconate solution of 0.5% alcoholic chlorhexidine) (R=250); and performing the tricotomy before inserting the catheter (R=250).

In Phase 2 - catheter insertion -, an identified nonconformity was the lack of specific criteria for the choice of catheter lumens size (R=140), considering that the higher the number of lumens, the greater the probability of infection. The need to create a specific SOP for the choice of lumens size was suggested, as well as to standardize the use of monolumen and to determine the use of double lumen by justification.

Regarding the choice of the professional, who will perform the procedure, the reported nonconformity was the difficulty during the insertion of the CVC (R=200). The EG reported that multiple puncture attempts (more than two) by the same professional are frequent due to technical incapacity, which increases the likelihood of pneumothorax, hematoma and catheter contamination. In these situations, the action suggested by EG was the requirement of the presence of the preceptor or the more experienced resident when the CVC puncture procedure is performed by a resident physician.

In Phase 3 - maintenance of the CVC -, the nonconformity related to the daily evaluation of the possibility of CVC withdrawal was scored as high risk (R=200). The probable cause is the lack of technical knowledge of ICU health professionals. In some cases, only the removal of the catheter is requested when the patient is discharged from the unit, which does not occur during the period of hospitalization in the sector. The actions suggested by the EG are the qualification of the professionals involved in the care of the critical patient regarding the importance and the benefits of the early withdrawal of the CVC and the creation of a daily routine to evaluate the permanence of the catheter.

The protection of CVC dressing during bathing was considered a nonconformity and scored as moderate risk (R=180). Although they routinely use the dressing with sterile gauze and adhesive tape, changed every 48 hours, there is no precaution to protect it during bathing, for

lack of knowledge of the risk of infection of the catheter ostium. This nonconformity is attributed to the lack of knowledge of the nursing technician's team and is associated with the type of standardization of the CVC dressing in the institution. EG suggested standardizing the dressing with clear film, which allows visualization of the site and early identification of secretion at the puncture site.

Another nonconformity found was the lack of asepsis of the stopcock and the exchange of its protectors (R=100). It has also been identified the non-performing asepsis of medication and solutions bottles before puncturing them with needle or equipment. This was attributed by the technical ignorance of the professional. Other triggering factors were the lack of alcohol sachet in the hospital and the overload of activities of the nursing technician, who, due to the demands, prioritizes other care. The actions suggested by the EG were: to review the staff of the ICU, considering the size of the professionals by patients' severity; and, training the nursing team, according to the technical standards related to the asepsis care of the stopcock and medication bottles and the standardization of the procedures in the unit.

DISCUSSION

The criteria for the Central Venous Catheter Patient Care (CVCPC) process steps are determined by guidelines^(6,8,9), which should be studied by professionals working in intensive care.

The criteria for insertion of the Central Venous Catheter (CVC) are clear and established, among them: patients without peripheral puncture conditions; rapid solution management; immediate or predictable hemodynamic instability; administration of hypertonic or vesicant medications in peripheral veins; drug incompatibilities; and TPN^(10,11). The extravasation of these medications can damage tissues, leading to necrosis. Thus, the CVC, because it is punctured in a calibrous and deep vessel, if well positioned, prevents this damage and guarantees the plasma concentration⁽¹²⁾. The adoption of SOPs, standardizing the criteria for indicating the procedure in the institution, contributes to the qualification of care^(13, 14).

Asepsis of the skin with 0.5% chlorhexidine gluconate solution at the site where the catheter will be inserted should comply with the minimum time of two minutes before the puncture^(6,8,9,14). Inappropriate practices, such as blowing, shaking or using gauze, increase the chances of infection because they prevent the product from fulfilling its purpose⁽¹⁵⁾. Another factor related to the preparation of the skin, in places where the CVC will be inserted, is the tricotomy with a razor blade for surgical procedures, a contraindicated practice, but still frequent in some institutions⁽¹⁶⁾. However, the tricotomy with electric trichotomizer⁽¹⁾ is indicated only in cases of excessive amount of hair at the puncture site or when it is difficult to allocate the surgical fields and fixation of surgical plaques and dressing in the postoperative period^(17,18).

Regarding the insertion of the CVC, the orientation is that the same professional should not make more than two puncture attempts. When necessary, assistance should be sought because the number of attempts increases the risk of trauma and unnecessary damage to the blood vessel⁽¹⁹⁾.

The choice of catheter lumens may also be related to the risk of infection^(19,20). However, there are controversies related to the association of Bloodstream Infection (BSI) and the size of lumens⁽²⁰⁾.

The option of transparent dressing is a preference of the institution, and the risk of BSI is independent of the type of dressing (gauze or transparent film). However, sterile clear films are a good option for CVC dressing because they help in the daily evaluation of the puncture site and the protection of the dressing during bathing⁽⁹⁾. However, exchanges should occur no more than every seven days. However, clear films are contraindicated for use immediately after the procedure or when there is bleeding at the puncture site because they do not have absorption capacity^(6,20).

The guidelines, which conduct this study, recommend the performance of asepsis of bottles and ampules of medication, as well as of stopcock, preferably with 70% alcohol, before the administration of medications^(14,19). Thus, the use of stopcock with a positive pressure valve

connector is an alternative to be considered by the institution, since it is not necessary to open the system to administer medications and solutions. However, it is important to note that, before administering the medication, it will always be necessary to perform the asepsis of the 70% alcohol stopcock⁽⁶⁾.

It should be emphasized that nursing plays a fundamental role in the Central Venous Catheter Patient Care, especially in relation to the prevention of BSI in ICUs. In this sense, identifying potential failures in this process is one of the contributions of this study to the nursing area. In addition, the research results may also support training and ongoing education actions of nursing professionals, including the qualification of records, which also contribute to evaluate and plan the care process, promoting patient safety⁽²¹⁾.

CONCLUSION

In the analysis of the steps of the Central Venous Catheter Patient Care (CVCPC) process steps, potential failures to prevent bloodstream infection (BSI) in ICUs were identified, stand out: nonconformities classified as medium risk (lack of CVC indication criteria, inadequate choice of lumens, protection of the dressing during bathing, lack of asepsis and solution bottles before administering the medication, and not exchanging stopcock protector) and high (not waiting the least time of two minutes after asepsis of the skin with chlorhexidine, performing the tricotomy with a razor blade before inserting the catheter, several attempts of insertion by the same professional, and daily evaluation of the possibility of removal of the CVC).

As a limiting factor of the research, the dispersion of the EG members is noticed, who started with nine members and ended with five. It is considered that the methodology adopted helped the group communication on strategies for the prevention of BSI. It also pointed out the need to implement strategies that seek to promote actions that prevent the occurrence of potential failures in the CVCPC process, aiming mainly at the prevention of BSI, but also the creation of Standard Operational Procedures (SOPs), the assistance staff and the

standardization of lumens and dressings, among others.

ANÁLISE DAS ETAPAS DO PROCESSO DE CUIDADO AO PACIENTE COM CATETER CENTRAL

RESUMO

Objetivo: analisar as Etapas do Processo de Cuidado ao Paciente com Cateter Venoso Central (CPCVC) buscando identificar falhas potenciais para a prevenção de infecção de corrente sanguínea na unidade de terapia intensiva. **Método:** utilizou-se o Método de Análise de Falhas e Efeitos. Estudo realizado nas Unidades de Terapia Intensiva de um hospital de grande porte na cidade de Caxias do Sul. Nove profissionais de enfermagem constituíram o grupo de avaliação. Para o cálculo de risco, foram definidas a gravidade, a probabilidade de ocorrência e a possibilidade de detecção em cada item avaliado. **Resultados:** os resultados apontaram inconformidades como falta de critério de indicação e riscos relacionados à proteção de barreira e à inserção e manutenção do cateter. **Conclusão:** considera-se que a equipe estava comprometida com a qualificação do processo de CPCVC. Entretanto, é necessária a implementação de estratégias para promover ações que impeçam a ocorrência das falhas potenciais.

Palavras-chave: Controle de infecção. Cateteres Venosos Centrais. Cuidados de enfermagem.

ANÁLISIS DE LAS ETAPAS DEL PROCESO DE CUIDADO AL PACIENTE CON CATÉTER CENTRAL

RESUMEN

Objetivo: analizar las Etapas del Proceso de Cuidado al Paciente con Catéter Venoso Central (CPCVC) buscando identificar problemas potenciales para la prevención de infección de torrente sanguíneo en la unidad de cuidados intensivos. **Método:** se utilizó el Método de Análisis de Modo y Efecto de Fallos. Estudio realizado en las Unidades de Cuidados Intensivos de un hospital de gran tamaño en la ciudad de Caxias do Sul-RS-Brasil. Nueve profesionales de enfermería constituyeron el grupo de evaluación. Para el cálculo de riesgo, fueron definidas la gravedad, la probabilidad de ocurrencia y la posibilidad de detección en cada ítem evaluado. **Resultados:** los resultados señalaron disconformidades como falta de criterio de indicación y riesgos relacionados a la protección de barrera y a la inserción y el mantenimiento del catéter. **Conclusión:** se considera que el equipo estaba comprometido con la cualificación del proceso de CPCVC. Pero, es necesaria la implementación de estrategias para promover acciones que impidan la ocurrencia de los problemas potenciales.

Palabras clave: Control de infección. Catéteres Venosos Centrales. Cuidados de enfermería.

REFERENCES

1. Carta de Ottawa. Primeira Conferência Internacional sobre Promoção da Saúde. Ottawa, novembro, 1986 [citado em 07 Set]; Disponível em: http://bvsms.saude.gov.br/bvs/publicacoes/carta_ottawa.pdf.
2. Brasil. Senado Federal. Constituição [da] República Federativa do Brasil. Brasília; 1988.
3. Brasil. Lei 8.080, de 19 de setembro de 1990 (BR). Dispõe sobre as condições para promoção, proteção e recuperação da saúde, a organização e o funcionamento dos serviços correspondentes e dá outras providências [on-line], Brasília (DF). 19 set 1990 [citado em 10 nov]. Disponível em: http://www.planalto.gov.br/ccivil_03/leis/L8080.htm.
4. Guedes-Granzott RB, Silva K, Dornelas R, Domenis DR. active methodologies and practice of teaching in the community: its importance in the formation of the speech language therapist and audiologist. *Distúrbios Comuns* [on-line]. 2015; [citado em 10 Nov]; 27(2): 369-74. Available from: <https://revistas.pucsp.br/dic/article/view/20026>.
5. Dempsey C, Battel-Kirk B, Barry MM. The CompHP Core Competencies Framework for Health Promotion Handbook – Workpackage 4. Executive Agency for Health Promotion and Consumers and National University of Ireland Galway. 2011. Available from: http://www.szu.cz/uploads/documents/czzp/nerovnosti/2011/5_CompHP_Core_Competencies_Framework_for_Health_Promotion_Handbook_revised.pdf.
6. Silva KVLG, Gonçalves GAA, Santos SB, Machado MFAS, Rebouças CBA, Silva VM, et al. Training of adolescent multipliers from the perspective of health promotion core competencies. *Rev Bras Enferm* [on-line]. 2018; [citado em 16 Dez]; 71(1):98-105. doi: <http://dx.doi.org/10.1590/0034-7167-2016-0532>.
7. Pinheiro DGM, Scabar TG, Maeda ST, Fraccolli LA, Pelicioni MCF, Chiesa AM. Health promotion competencies: challenges of formation. *Saúde Soc* [on-line], 2015; [citado em 07 Set]; 24(1): 180-8. doi: <http://dx.doi.org/10.1590/S0104-12902015000100014>.
8. Machado MFAS, Machado LDS, Xavier SPL, Lima LA, Moreira MRC, Ferreira HS. Competências em promoção da saúde: o domínio parceria na residência multiprofissional em saúde. *Rev Bras Promoç Saúde* [on-line], 2018; [citado em 22 Jan] 31(4): 1-7, out./dez. doi: <http://dx.doi.org/10.5020/18061230.2018.8761>.
9. Mendes KDS, Silveira RCCP, Galvão CM. Revisão Integrativa: Método de pesquisa para a incorporação de evidências na saúde e na enfermagem. *Texto Contexto Enferm* [on-line], 2008 [citado em 07 Set]; 17(4): 758 – 64. doi: <http://dx.doi.org/10.1590/S0104-07072008000400018>.
10. Tavares MFL, Rocha RS, Bittar CML, Petersen CB, Andrade MA. A Promoção da Saúde no ensino profissional: desafios na Saúde e a necessidade de alcançar outros setores. *Ciência&SaúdeColetiva* [on-line], 2016; [citado em 09 Set]; 21(6): 1799-1808. doi: <http://dx.doi.org/10.1590/1413-81232015216.07622016>.
11. Dias S, Gama A. Ensino da Promoção da Saúde em pós-graduação em saúde pública internacional no contexto do processo de Bolonha. *Saúde Soc* [on-line], 2016; [citado em 09 Set]; 25 (3): 771-85. doi: <http://dx.doi.org/10.1590/s0104-12902016150215>.
12. Mereu A, Sotgiu A, Buja A, Casuccio A, Fabiani L, Guberti E et al. Professional Competencies in health promotion and public health: what is common and what is specific? Review on the European debate and perspectives for professional Development. *Epidemiol. Prev* [on-line]. 2015; [citado em 09 Set]; 39(4): Suppl 1: 151 – 58. Available from: http://www.epiprev.it/materiali/2015/EP2015_I4S1_033.pdf.

13. Battel-Kirk B, Barry MM. Developing competency – based accreditation for health promotion in Europe. *Rev Med* [on-line]. 2013; [citado em 09 Set]; 92(2):87 – 96. doi: <https://doi.org/10.11606/issn.1679-9836.v92i2p87-96>.
14. Fiorati RC, Arcêncio RA, Souza LB. Social inequalities and access to health: challenges for society and the nursing Field. *Rev. Latino-Am. Enfermagem* [on-line]. 2016; [citado em 09 Set]; 24:e2683. doi: <http://dx.doi.org/10.1590/1518-8345.0945.2687>.
15. Gonçalves NEXM, Camelo SHH, Soares MI, Leal LA, Vassimo HS. Professional skills of the hospital nutritionist and strategies to potentiate them. *Cienc Cuid Saude* [on-line] 2017. [citado em 15 Jan]; 16(4), Out-Dez. doi: <http://dx.doi.org/10.4025/cienccuidsaude.v16i4.36188>.
16. Sobral ILL, Machado LDS, Gomes SHP, Pequeno AMC, Nuto SAS, Machado MFAS. Primary health care professionals' knowledge of health promotion competencies. *Rev Bras Promoç Saúde* [on-line], Fortaleza, 2018, [citado em 10Jan]; 31(2): 1-7, abr./jun. doi: <http://dx.doi.org/10.5020/18061230.2017.6653>.
17. Gandra EC. A defesa da saúde e a atuação política do enfermeiro: competências para a promoção da saúde na formação profissional. 2014. [dissertação]. Programa de Pós-graduação da Escola de Enfermagem. Universidade Federal de Minas Gerais. 2014. Disponível em: <http://hdl.handle.net/1843/ANDO-9KZFYC>.
18. Dias IKR, Teixeira OFB, Teodoro IPP, Maia ER, Lopes MSV, Machado MFAS. Nursing educators' perceptions of the domains of the core competencies framework for health promotion. *Cogitare Enferm* [on-line]. 2018, [citado em 05 Jan]; (23)2:e52664. doi: <http://dx.doi.org/10.5380/ce.v23i2.52664>.
19. Silva KL, Barcelos BJ, França BD, Araújo FL, Magalhães Neta IT, Ledo MM. Between experiments and experiences: challenges for teaching competencies for health promotion in Nursing Education. *Interface (Botucatu)* [on-line]. 2018, [citado em 05Abr] 22(67):1209-20. doi: <http://dx.doi.org/10.1590/1807-57622017.0467>.

Corresponding author: Juciana Isabel da Silva. Av. Luiz Manoel Gonzaga, 744 - Três Figueiras. Porto Alegre - RS, 90470-250E-mail: jucianaisabel@gmail.com

Submitted: 02/04/2018

Accepted: 13/02/2019