







EVIDENCE OF VALIDITY OF THE NURSING BELIEFS SCALE IN PATIENT SAFETY TRAINING

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ABSTRACT

Objective: to verify the evidence of psychometric validity of the nursing professionals' belief assessment instrument in the patient safety training process in a hospital institution.

Method: a quantitative study with a methodological design carried out in a teaching hospital in the Brazilian Midwest, from March to June 2018, with the participation of 369 nursing professionals. The instrument used was adapted from the scale already validated Beliefs in the Training System for health professionals. In this study, the adapted instrument was subjected to verification of psychometric properties through assessment of internal consistency and confirmatory factor analysis.

Results: the scale's adapted version was composed of 30 items distributed in three factors: 1 - Beliefs about the contribution of training to individuals and organization; 2 - Beliefs about the training needs assessment process; 3 - Beliefs about results and the training process. The scale showed a satisfactory psychometric index with good adjustment indexes (CFI=0.92 and RMSEA=0.05 and SRMR=0.07), Cronbach's and Mc Donald's alpha above 0.86 and significant factor loads of 0.62 to 0.80.

Conclusion: the instrument presented adequate psychometric properties in the studied group, which can be reproduced in other institutions and contribute to diagnosis of the dimensions that influence the success of patient safety training, ensuring more assertive decision making to promote better quality results nursing care.

DESCRIPTORS: Beliefs. Inservice training. Patient safety. Nursing. Hospitals.

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EVIDÊNCIA DE VALIDADE DA ESCALA DE CRENÇAS DA ENFERMAGEM NO TREINAMENTO EM SEGURANÇA DO PACIENTE

RESUMO

Objetivo: verificar as evidências de validade psicométrica do instrumento de avaliação de crenças dos profissionais de enfermagem no processo de treinamento para segurança do paciente, em uma instituição hospitalar.

Método: estudo de natureza quantitativa com desenho metodológico, realizado em um hospital de ensino do centro-oeste brasileiro, no período de março a junho de 2018, com a participação de 369 profissionais da enfermagem. O instrumento utilizado foi adaptado da escala, já validada, Crenças no Sistema de Treinamentos para profissionais da saúde. Neste estudo, o instrumento adaptado foi submetido à verificação das propriedades psicométricas por meio de avaliação da consistência interna e análise fatorial confirmatória.

Resultados: a versão adaptada da escala foi composta de 30 itens distribuídos em três fatores: 1 - Crenças sobre a contribuição do treinamento para o indivíduo e a organização; 2 - Crenças sobre o processo de levantamento de necessidades do treinamento; e 3 - Crenças sobre resultados e o processo de treinamento. A escala demonstrou índice psicométrico satisfatório com bons índices de ajuste (CFI=0,92 e RMSEA=0,05 e SRMR=0,07), alfa de Cronbach e Mc Donald acima de 0,86 e cargas fatoriais significativas, de 0,62 a 0,80.

Conclusão: o instrumento apresentou adequadas propriedades psicométricas no grupo estudado, podendo ser reproduzido em outras instituições e, assim, contribuir para o diagnóstico das dimensões que influenciam o sucesso dos treinamentos em segurança do paciente, assegurando tomada de decisões mais assertivas para promoção de melhores resultados na qualidade assistencial da enfermagem.

DESCRITORES: Crenças. Capacitação em serviço. Segurança do paciente. Enfermagem. Hospitais.

EVIDENCIA DE VALIDEZ DE LA ESCALA DE CREENCIAS DE ENFERMERÍA EN LA FORMACIÓN EN LA SEGURIDAD DEL PACIENTE

RESUMEN

Objetivo: verificar la evidencia de validez psicométrica del instrumento de evaluación de creencias de los profesionales de enfermería en el proceso de formación en seguridad del paciente en una institución hospitalaria.

Método: un estudio cuantitativo con diseño metodológico, realizado en un hospital docente del medio oeste brasileño, de marzo a junio de 2018, con la participación de 369 profesionales de enfermería. El instrumento utilizado fue adaptado de la escala, ya validada, Creencias en el Sistema de Formación (*Crenças no Sistema de Treinamentos*) para profesionales de la salud. En este estudio, el instrumento adaptado fue sometido a verificación de propiedades psicométricas mediante evaluación de consistencia interna y análisis factorial confirmatorio.

Resultados: la versión adaptada de la escala estuvo compuesta por 30 ítems distribuidos en tres factores: 1 - Creencias sobre el aporte de la formación al individuo y la organización; 2 - Creencias sobre el proceso de evaluación de las necesidades de formación; y 3 - Creencias sobre los resultados y el proceso de formación. La escala mostró un índice psicométrico satisfactorio con buenos índices de ajuste. (CFI=0.92 y RMSEA=0.05 y SRMR=0.07), alfa de Cronbach y Mc Donald por encima de 0.86 y cargas factoriales significativas, de 0.62 a 0.80.

Conclusión: el instrumento presentó adecuadas propiedades psicométricas en el grupo estudiado, las cuales pueden ser reproducidas en otras instituciones y, así, contribuir al diagnóstico de las dimensiones que influyen en el éxito de la formación en seguridad del paciente, asegurando una toma de decisiones más asertiva para promover resultados de mejor calidad cuidado de enfermera.

DESCRIPTORES: Creencias. Capacitación en servicio. Seguridad del paciente. Enfermería. Hospitales

INTRODUCTION

The health educational process presupposes the technical-scientific and ethical-political foundation of professional activities, considering individual and group learning needs.¹

Such needs are observed by gaps in care due to the insufficient performance of some competencies and, also, by the needs of users and family. Thus, educational actions aim at the ability to transform reality and mediate proposals in the health care model.¹

The learning needs observed by gaps in nursing care, due to insufficient professional performance of some competencies, ratify educational actions, which aim at the ability to transform reality and mediate proposals in the health care model.¹

Among these actions and due to the magnitude of patient safety incidents, there are increasing educational strategies for assistance improvement promotion, with emphasis on the role of nursing in preventing and reducing risks and harms in hospital services². In this regard, having a well-developed team is a major factor for patient safety.

Thus, recognizing the importance of educational actions, it is relevant to identify the factors that affect them, especially those related to patient safety, such as the beliefs reported in studies that point them as an important variable about training at work.³⁻⁴

Beliefs are defined as a set of information that people have about a particular object and are mediators in the relationship between attitude, intention and behavior. Beliefs can be shared and reconstructed⁵, impacting the purpose of applying or not what is believed.⁶

Considering educational actions as a favorable element to patient safety and the understanding of beliefs in transferring the acquired knowledge on training to nursing care practice as a guiding element for improvements in health care, we assume that analyzing the beliefs in the patient safety training system can subsidize diagnosis of factors that affect the stages of planning, execution and results of educational actions, thus enabling adjustments to local realities and boosting the results of promoting safe patient care.

Furthermore, no instruments were found in the literature to address beliefs related to training whose theme was related to patient safety.

This study aims to verify the evidence of psychometric validity of the nursing professionals' belief assessment instrument in the patient safety training process in a hospital institution.

METHOD

This is a quantitative study with a methodological design that involved evidence of a scale's validity to assess nursing beliefs in the educational process on patient safety. Data collection took place in a teaching hospital in the Brazilian Midwest, from March to June 2018.

The instrument applied in this study, *Escala de Crenças no Sistema de Treinamentos* (ECST – freely translated as Beliefs in the Training System Scale), originally created for workers in the administrative and financial areas, was composed of 35 items distributed in 3 dimensions: Factor 1 - "Beliefs about the contributions of training programs both to the individual and the organization"; Factor 2, "Beliefs about the assessment process for training needs; and Factor 3, "Beliefs about training results and processes".⁸

In 2015, in order to support theoretical concepts to define educational policies in health services, ECST was adapted for health professionals through semantic evidence and psychometric validity of the scale, showing itself to be reliable, with 32 items in the same three dimensions.⁴

ECST was adapted to the patient safety theme through changes in terms in the items, based on a literature review on the subject, proceeding to a new verification of evidence of semantic and content validity by three experts.

This assessment was carried out through a consensus meeting with a group composed of three nurses, experts in the patient safety field and in research related to the scale of beliefs in training and management of health services.

At this stage, each item was assessed individually. Semantics analyzes the clarity, objectivity and understanding of language, and content demonstrates the representativeness before the theoretical universe and the relevance of terms added on patient safety.

From this analysis, items 4 and 9 were excluded, both belonging to Factor 1 - as they are related to promotion and professional career; therefore, the instrument's final version had 30 items.

Subsequently, a pilot test was carried out with eight professionals, four of whom were nursing technicians and four nurses who did not have difficulty in understanding and pertinence and answered all items. They were excluded from the study sample. After a pilot test, the instrument containing the ECST was applied to the study participants.

The data collection instrument used was composed of a Likert-type psychometric scale with 10 intervals, where 1 means *I don't believe* and 10, *I totally believe*, which shows the most favorable and most unfavorable aspects to the object of investigation.⁸ It was self-administered with guidance on how to fill it out and consisted of two parts: the first had items related to health professionals' characteristics, namely: sex, age, education, time passed after graduation, work unit and exercise length in the work unit, work shift, employment relationship, function performed at the institution, external and internal participation in patient safety training; the second part addressed the beliefs in patient safety training. The scale was composed of 30 items distributed in three dimensions: Factor 1 - Beliefs about the contributions of training programs both to the individual and the organization, composed of eight items (Items 2,3,4,6,9,11,12, 13); Factor 2 - Beliefs about the assessment process for training needs, consisting of eight items (Items 1,5,7,8,10,14,17, 18); Factor 3 - Beliefs about training results and processes, consisting of 14 items (Items 15,16,19,20,21,22,23,24,25,26,27,28, 29, 30), as shown in Chart 1.

The study population consisted of 645 nursing professionals, 176 nurses and 469 nursing technicians, distributed throughout the various service units. To calculate the sample, the criterion of psychometric studies⁹ was adopted, which recommends 10 respondents for each item of the instrument; thus, the satisfactory sample for this study was at least 300 participants.

Nurses and nursing technicians working in the teaching hospital units in Goiás who performed nursing actions or related to patient safety have been included. Professionals who did not respond to the instrument or who did not respond to 50% of items in each factor have been excluded, totaling 68 professionals.

Thus, of the 599 nursing professionals, who were working day and night shifts, 369 participated in the study. It was decided to exclude professionals who were in official leave or vacation, as well as those who did not exercise nursing actions.

Chart 1 – Demonstration of the ECST’s adaptation for the patient safety theme. Goiânia, Goiás, 2018.

Dimensions' names	Definitions	Items	Term change
Factor F1 - Beliefs about the contributions of training programs both to the individual and the organization	They portray beliefs about the results produced by long-term training.	2,3,4,6,9,11,12, 13	The expression <i>patient safety</i> has been included in all items.
		2, 3	The word <i>people</i> has been replaced by <i>professionals</i> .
		6	Item changed to plural.
Factor F2 - Beliefs about the assessment process for training needs	They portray the process of raising training needs in the organization.	1,5,7,8,10,14,17, 18	The expression <i>patient safety</i> has been included in all items.
		8	The expression <i>for participation in training</i> has been included.
		10	The expression <i>process</i> has been included.
Factor F3 - Beliefs about training results and processes	They portray professionals' beliefs about immediate results of training from the perspective of its influence on the care process.	15,16,19,20,21, 22,23,24,25,26,27, 28,29, 30	The expression <i>patient safety</i> has been included in all items.
		16,17,20,22, 23	The word <i>people</i> has been replaced by <i>professionals</i> .
		25	The word <i>training</i> has been replaced by <i>professionals</i> .
		27	The word <i>courses</i> has been replaced for <i>themes</i> .

The nursing professionals included were instructed to fill out the self-applicable instrument at availability time, which was soon returned to the responsible researcher.

Professionals were approached during the study period and informed about the study. The Informed Consent Form was given for participants who agreed to participate.

Data collection occurred from April to June 2018, after the approval of nursing management. Nursing professionals were personally approached during the period of work by the researcher and properly trained research assistant, who waited for filling in the instrument.

The data were tabulated in an Excel spreadsheet with double conference and processed in the statistical environment R.

Reliability analysis and confirmatory factor analysis were performed to investigate the psychometric properties for construct evaluation. The factorial structure of the ECST was assessed through the Kaiser-Meyer-Olkin (KMO) sample adequacy measure; then, confirmatory factor analysis (CFA) was performed, specifying the ECST model in the health area⁴, without two items excluded in the scale adaptation step to the context of patient safety.

To judge the model's quality of fit, the chi-square test, CFI higher than 0.90 and RMSEA between 0.05 and 0.08 were used, assuming up to 0.10 as the upper limit. Factor loadings greater than 0.5 contribute significantly to compose all factors. A level of significance of 0.05 was adopted.¹⁰

The scale items' internal consistency was analyzed using Cronbach's alpha reliability test and McDonald's Omega. Both coefficients followed the classification: less than 0.60=inadequate; 0.60 to 0.69 =marginal reliability; 0.70 to 0.79 =acceptable; 0.80 to 0.89 =good; and 0.90 or more =excellent.¹⁰

In the second stage, the participants' scores in dimensions 1, 2 and 3 were analyzed by the sum of items and divided by the number of items in each factor, considering the value from 0 to 10. Responses with more than half of the missing values were excluded; in the case of random missing, the values were replaced by the mean of the respective items. Inferential tests, variance analysis and correlation tests were used using nonparametric and Spearman tests.

RESULTS

Of the 369 nursing professionals, most (88.6%) were females with a mean age of 45.4 years (SD=10.23). Concerning education, 40.6% of participants had a specialist level, 28.9% had a technical level, 18.4% had a bachelor's degree and 9.7% had a master's degree. 66.3% are nursing technicians and 34.7% are nurses.

As for professional training length, the participants had on average 19.2 years (SD=8.9) and 18.4 years (SD=8.8) of professional activity in the institution. The highest number of participants was observed in inpatient units (32.5%), followed by outpatient clinics (20.6%), Intensive Care Units (ICU) (18.70%), urgency and emergency care units (12.5%), surgical center and Central Sterile Supply Department (CSSD) (11.90%), and specialized services (3.6%).

Concerning participation in training programs on patient safety, 31.4% participated in the last 12 months, both inside and outside the hospital.

As for the Patient Safety Center (NSP - *Núcleo de Segurança do Paciente*), 26.8% of nursing professionals considered the NSP active in training and 52.6% provided support of managers in training.

In the model adjustment indicators, in relation to absolute adjustment measures, the specification of correlated errors resulted in a significant improvement of the model with acceptable adjustment indexes [CFI=0.92 and RMSEA=0.05 and SRMR=0.07], according to Table 1.

Table 1 – Adjustment indexes of the original and re-specified model of the ECST. Goiânia, Goiás, Brazil, 2018.

Confirmatory Model	$\chi^2(df^*)$	AIC [†]	BIC [‡]	CFI [§]	TLI	SRMR [¶]	RMSEA ^{**}
ECST model for healthcare professionals	931.9 (402)	45782.1	46145.8	0.88	0.88	0.07	0.07
ECST model (respecified for patient safety)	794.1 (399)	45572.8	45948.3	0.92	0.91	0.07	0.05

Caption: df*=degrees of freedom; AIC[†]=Akaike Information Criterion, BIC[‡]=Bayesian Information Criterion, CFI[§]=Robust Comparative Fit Index (>0,9), TLI^{||}=Robust Tucker-Lewis Index(>0,9), SRMR[¶]=Standardized Root Mean Square Residual(<0,08), RMSEA^{**}=Root Mean Square Error of Approximation (<0,05).

Confirmatory factor analysis showed that all items had satisfactory factor loads, which ranged from 0.62 to 0.80. Item 9, "Patient safety training contributes to the better functioning of work teams", was the most common, with 64.0% of its variability explained by the dimensions¹⁰, as shown in Table 2.

Table 2 – Mean and standard deviation, factor loads and commonality of the ECST items. Goiânia, Goiás, Brazil, 2018.

Items	Factor load				h ²
	M (SD)	Factor 1	Factor 2	Factor 3	
2. Participation in patient safety training has more advantages than disadvantages for both professionals and patients.	8.54 (2.12)	0.63	–	–	0.40
3. Participating in patient safety training promotes the improvement of professionals.	8.99 (1.7)	0.77	–	–	0.60
4. The more diversified the training opportunities on patient safety (at a distance, in the classroom, at the workplace), the better the Institution's training needs will be met.	8.28 (2.08)	0.68	–	–	0.46
6. Patient safety training can improve the Institution's work processes.	8.89 (1,65)	0.77	–	–	0.59
9. Patient safety training contributes to the better functioning of work teams.	8.51 (2.03)	0.80	–	–	0.64
11. The quality of work is better when the content learned in patient safety training is applied in practice.	8.54 (1,99)	0.75	–	–	0.56
12. Professionals' work is facilitated after participating in patient safety training.	7.76 (2.36)	0.62	–	–	0.39
13. Patient safety training contributes to attaining the Institution's goals.	7.89 (2.31)	0.62	–	–	0.38
1. Initiative to participate in patient safety training is important in this institution.	5.52 (2.94)	–	0.68	–	0.46
5. The institution is able to identify the real training needs of professionals on patient safety.	5.87 (2.72)	–	0.72	–	0.52
7. Patient safety training is in line with the Institution's organizational strategy.	6.09 (2.72)	–	0.74	–	0.55
8. The criterion for vacancy distribution for participation in training on patient safety is based solely on professionals' needs for learning.	5.1 (2.69)	–	0.68	–	0.36
10. The Institution has been making patient safety training increasingly applicable to the reality of the professionals' work process.	5.41 (2.82)	–	0.77	–	0.60
14. Managers/leaders are able to adequately identify their professionals' patient safety training needs.	6.39 (2.59)	–	0.76	–	0.57
17. The professionals in my work unit have information about training related to patient safety.	5.49 (2.9)	–	0.76	–	0.58

Table 2 – Cont.

Items	Factor load				h ²
	M (SD)	Factor 1	Factor 2	Factor 3	
18. The institution provides conditions for applying what was learned in training on patient safety.	5.43 (2.71)	–	0.77	–	0.59
15. Professionals learn the content covered in patient safety training.	7.04 (2.4)	–	–	0.66	0.55
16. Professionals use what they learned in patient safety training at work.	6.6 (2.88)	–	–	0.72	0.51
19. Professionals feel free to exchange experiences when they are participating in patient safety training.	6.6 (2.88)	–	–	0.74	0.60
20. Exchanges of experience during training facilitate the process of learning about patient safety.	7.71 (2.64)	–	–	0.78	0.61
21. It is easy for professionals to choose the patient safety training that best suits their needs.	5.51 (2.81)	–	–	0.66	0.44
22. Professionals participate in patient safety training exclusively because of the need to develop new knowledge, skills and attitudes.	5.9 (2.73)	–	–	0.69	0.47
23. The contents covered in patient safety training can be applied at work.	7.64 (2.57)	–	–	0.75	0.57
24. Professionals take patient safety training activities seriously.	6.99 (2.5)	–	–	0.76	0.58
25. The Institution's core values are strengthened by training related to patient safety.	6.58 (2.8)	–	–	0.75	0.57
26. Training dissemination on patient safety facilitates the choice by professionals of the most appropriate topics to their needs.	6.42 (2.9)	–	–	0.74	0.55
27. Patient safety training helps to create a more favorable organizational climate.	7.53 (2.4)	–	–	0.77	0.59
28. Patient safety training changes the way people develop their activities.	7.68 (2.3)	–	–	0.76	0.58
29. Patient safety training shows a reality similar to that experienced by professionals in the work situation.	6.38 (2.6)	–	–	0.75	0.56
30. Patient safety training contributes to creating new organizational values.	7.9 (2.32)	–	–	0.70	0.49
Internal consistency					
<i>Cronbach's alpha</i>		0.88	0.89	0.94	
<i>McDonald's Omega</i>		0.86	0.90	0.96	

Note: The instrument has been freely translated into English, since it has not yet been officially translated and validated.

DISCUSSION

Participants have sociodemographic characteristics with regard to being women and nursing technicians, similar to the study that validated the ECST.

The final model of the ECST with a focus on patient safety showed good indexes of adjustment and maintained the same three factors of the scale found in the study of the ECST of health professionals⁴, as they presented factor loads above 0.6. Moreover, Cronbach's Alpha and Mac Donald's Omega coefficients indicated good reliability properties. Such elements demonstrate solidity in the model studied and reveal evidence about the ECST's internal validity, confirming the scale's objective in measuring the construct it was proposed to.¹¹

The need to understand the factors that influence training transfer is relevant to maximize organizational changes,¹² which generate quality in nursing care. Studies¹³⁻¹⁴ point to individual factors, such as motivation, age and work experience in nursing, environmental, cultural and management factors, which make it possible to apply the skills learned. Thus, knowing the beliefs in the patient safety training system, whose weakness in transferring training to work can result in deaths from adverse events, reinforce the importance of providing effective training in hospital settings.²

Another aspect to be considered is interaction between instructors and health professionals, as well as educational interventions linked to the reality of work, contributing to the long-term result¹⁴⁻¹⁵, in line with the concept of permanent education.

For better long-term results to occur and adequate planning of educational actions, it is essential to diagnose the needs perceived by professionals.¹²⁻¹⁴

Training needs assessment proves to be essential to educational programs as long as carried out with the involvement of the team.¹⁶ Thus, knowing the beliefs in patient safety training favors decision-making at all levels of the organization for planning the educational process.

The needs for educational actions by professionals, when based on work¹⁷ and through discussion of context and issues of interest to professionals,¹⁸ make critical-reflective skills viable, expanding or giving other meaning to previously prepared knowledge, which can affect positively the reality of work.¹⁷

This conception provides continuous, meaningful learning, as well as the development of nursing skills in the work process,¹⁹ favoring planning care practices closer to patients' needs,²⁰ which contributes to quality of care and better results beyond technique execution.²¹

In this context, educational action processes consider the quality of the teaching material¹¹, instructors' characteristics, motivation to learn and the learning environment as learning facilitators.¹³

Organized and structured planning of instructional procedures influences in their success. For positive results, an educational action must be guided by aspects related to the target audience, objective, theme definition, educational action methodology, time and cost, participant call, training execution, as well as assessment and impact of this process.²² Therefore, it is relevant to define the instructional objectives in a clear way, understandable to all and with support of leaders, which can influence performance and attitudes of trained professionals.^{11,23}

Qualification of instructors and due familiarity with collaborative and participatory teaching methods have been shown to be essential to attract and motivate professionals to participate in educational actions.²³ Therefore, identifying the pedagogical strategies applicable to educational actions, from the target audience's perspective, associating them with different methods, favors obtaining effective results in patient safety.²⁴

There are a variety of interactive educational methods considered effective to promote patient safety²⁵ that, when used in the workplace, can favor learning²⁶ and sharing experiences. Moreover, they can reduce failures in care practices by allowing analysis and solution of problems arising from the work process.

Motivation to learn is also linked to the form of participation in educational activities as well as applicability of knowledge to the workplace and the value they attach to the tools and skills developed. Motivation is related to satisfaction with training programs, which increases acquisition of knowledge and perception of its usefulness for health professionals, obtaining an improvement in the quality of health care as a product.²⁶

The relevance of evaluating educational processes stood out, considering that educational interventions on patient safety can improve the culture of patient safety with regard to incident reports as well as minimize adverse event rates.²⁷ Furthermore, a study 28 revealed that 84% of nursing managers considered educational actions as essential for minimization. These considerations confirm the evidence of the instrument's content validity made by experts.

CONCLUSION

The ECST presented evidence of semantic, content and construct validity, as well as reliability, being considered, therefore, valid and reliable due to the evidence of psychometric validity evidence, which can be applied in other health services.

The ECST aims at diagnosing the factors that favor the results of training from the nursing's perspective. It is important as a management tool that implies the nurse's decision-making process, as well as the NSP in favor of improvements for patient safety educational actions.

The definition of educational actions' needs according to theories and results of previous studies implies diagnosis of skills gaps that are desired to be developed in nursing professionals. This makes it possible to formulate the educational process and, consequently, transfer the acquired skills to work. The belief favorable to the educational process may imply greater adherence to actions aimed at improvements, in quality of care and safe care by nursing. As beliefs are strengthened, attitudes, intentions and behavior in favor of training conducted.

Absence of items that identified specific training actions and indicators of the Permanent Education Center and the NSP, which would better justify discussions regarding training at the hospital, can be considered a study limitation.

The ECST application in a single institution and professional category may suggest a limitation; however, its proof of reliability indicates the study's contribution to further research in other health equipment, including other professional categories.

To this end, it is suggested to use the instrument in other contexts, in order to deepen the educational processes in patient safety in addition to the nursing staff. The ECST will contribute as a tool for management in terms of identifying strengths and weaknesses in training on patient safety, providing opportunities for improvements in education and patient safety actions.

REFERENCES

1. Silva LAA, Leite MT, Pinno C. Contribuições das comissões de integração ensino-serviço Silva LAA, Leite MT, Pinno C. Contribuições das comissões de integração ensino-serviço na educação permanente em saúde. *Trab Educ Saúde* [Internet]. 2014 [cited 2019 Mar 31];12(2):403-24. Available from: <https://doi.org/10.1590/S198177462014000200011>
2. Oliveira RM, Leitão IMTA, Aguiar LL, Oliveira ACS, Gazos DM, Silva LMS, et al. Evaluating the intervening factors in patient safety: focusing on hospital nursing staff. *Rev Esc Enferm USP* [Internet]. 2015 [cited 2019 Jan 04];49(1):104-13. Available from: <https://doi.org/10.1590/S0080-623420150000100014>
3. Vêras ÉBS. Características individuais e as crenças sobre o sistema de treinamento: um estudo de caso no Ministério da Educação. Brasília. Dissertação - Programa de Pós-Graduação em Administração, Universidade de Brasília; 2013.
4. Mira VL, Zinn GR, Santos PT, Bucchi SM, Meireles E. Beliefs of Healthcare Professionals about Training and Institutional Development Actions. *IJND* [Internet]. 2015 [cited 2019 Jan 24];5(1):1-8. Available from: <https://doi.org/10.15520/ijnd.2015.vol5.iss01.32.01-08>
5. Pátaro CSO. Pensamentos, crenças e complexidade humana. *Cien Cogn*. 2007;12:134-49.
6. Verloo H, Desmedt M, Morin D. Beliefs and implementation of evidence-based practice among nurses and allied healthcare providers in the Valais hospital, Switzerland. *J Eval Clin Pract* [Internet]. 2017 [cited 2019 Mar 31];23(1):139-48. Available from: <https://doi.org/10.1111/jep.12653>
7. Freitas IA, Borges-Andrade JE. Construção e validação de escala de crenças sobre o sistema treinamento. *Estud Psicol* [Internet]. 2004 [cited 2019 Jan 24];9(3):479-88. Available from: <https://doi.org/10.1590/S1413-294X2004000300010>
8. Vasconcelos LC. Análise de sistemas de TD&E com base em indicadores objetivos e subjetivos: características de cursos e crenças de treinandos. Brasília. Dissertação - Instituto de Psicologia, Universidade de Brasília; 2007.
9. Kline RB. Principles and practice of structural equation modeling. 3th ed. New York (US): Guilford Press; 2010.
10. Hair JF, Black WC, Babin BJ, Anderson RE. Multivariate Data Analysis. Harlow (UK): Pearson; 2014.
11. Damásio BF. Uso da análise fatorial exploratória em psicologia. *Aval Psicol*. [Internet]. 2012 [cited 2019 Jan 24];11(2):213-28. Available from: http://pepsic.bvsalud.org/scielo.php?script=sci_arttext&pid=S1677-04712012000200007&lng=pt&nrm=iso
12. Ma F, Bai Y, Bai Y, Ma W, Yang X, Li J. Factors influencing training transfer in nursing profession: a qualitative study. *BMC Med Educ* [Internet]. 2018 [cited 2019 Jan 03];18:44. Available from: <https://doi.org/10.1186/s12909-018-1149-7>
13. Khosravi L, Dehghan Nayeri N, Salehi T, Kazemnejad A. Challenges of applying continuing education in tehran hospital practice as viewed by nurses. *Int J Community Based Nurs Midwifery* [Internet]. 2015 [cited 2019 Jan 03];3(2):123-31. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4441352/pdf/ijcbnm-3-123.pdf>
14. Bell BS, Tannenbaum SI, Ford JK, Noe RA, Kraiger K. 100 years of training and development research: What we know and where we should go. *J Appl Psychol*. [Internet]. 2017 [cited 2018 Oct 03];102(3):305-23. Available from: <https://doi.org/10.1037/apl0000142>
15. Silva LAA, Schmidt SMS, Noal HC, Signor E, Gomes IEM. Avaliação da educação permanente no processo de trabalho em saúde. *Trab Educ Saúde* [Internet]. 2016 [cited 2019 Feb 24];14(3):765-81. Available from: <https://doi.org/10.1590/1981-7746-sol00015>

16. Mazhisham PH, Khalid MY, Nazli NNNN, Manap R, Hussain NHM. Identification of Training Needs Assessment in Organizational Context. *IJTMSS*. 2018;1(5):20-30.
17. Miccas FL, Batista SSS. Permanent education in health: a review. *Rev Saúde Pública* [Internet]. 2014 [cited 2019 Feb 24];48(1):170-85. Available from: <https://doi.org/10.1590/S0034-8910.2014048004498>
18. Freitas MAO, Cunha ICK, Batista SHSS. Aprendizagem significativa e andragogia na formação continuada de profissionais de saúde. *Aprend Sign Revista*. 2016;6(2):1-20.
19. Peixoto LS, Pinto ACS, Tavares CMM, Rosas AMMTF. Perception of nurses in relation to training services offered through the service of continuous education. *J Res Fundam Care Online* [Internet]. 2015 [cited 2019 Feb 24];7(2):2323-35. Available from: <https://doi.org/10.9789/2175-5361.2015.v7i2.2323-2335>
20. Pereira Ld'Á, Silva KL, Andrade MFLB, Cardoso ALF. Permanent health education: a possible practice. *Rev Enferm UFPE online* [Internet]. 2018 [cited 2019 Feb 24];7(2):2323-35. Available from: <https://doi.org/10.5205/1981-8963-v12i5a234569p1469-1479-2018>
21. Amaro MOF, Mendonça ET, Carvalho CA, Nakada KN, Siman AG, Ferreira NCS. Concepções e práticas dos enfermeiros sobre educação permanente no ambiente hospitalar. *Arq Cienc Saúde UNIPAR* [Internet]. 2018 [cited 2019 Mar 28];22(2):87-94. Available from: <https://doi.org/10.25110/arqsaude.v22i2.2018.6337>
22. Eslamian J, Moeini M, Soleimani M. Challenges in nursing continuing education: A qualitative study. *Iran J Nurs Midwifery Res* [Internet]. 2015 [cited 2019 Mar 28];20(3):378-86. Available from: <https://pubmed.ncbi.nlm.nih.gov/26120340/>
23. Gomes APT. A importância da motivação e do treinamento nas organizações. *Rev Educ Psicol Interfaces*.2017;1(1):31-3.
24. Yu A, Fontana G, Darzi A. Evaluation of Education and Training Interventions for Patient Safety. London(UK): Centre for Health Policy at Imperial College; 2016.
25. Baumbusch J, Shaw M, Leblanc ME, Kjørven M, Kwon JY, Blackburn L, et al. Workplace continuing education for nurses caring for hospitalised older people. *Int J Older People Nurs* [Internet]. 2017 [cited 2019 Mar 28];12:e12161. Available from: <https://doi.org/10.1111/opn.12161>
26. Gracia-Pérez ML, Gil-Lacruz M. The impact of a continuing training program on the perceived improvement in quality of health care delivered by health care professionals. *Eval Program Plann* [Internet]. 2018 [cited 2019 Mar 28];66:33-8. Available from: <https://doi.org/10.1016/j.evalprogplan.2017.09.009>
27. Balarin CS, Zerbini T, Martins LB. A relação entre suporte à aprendizagem e impacto de treinamento no trabalho. *Rev Eletron Adm* [Internet]. 2014 [cited 2019 Mar 28];20(2):341-70. Available from: <https://doi.org/10.1590/1413-2311017201341925>
28. Reis MAS, Gabriel CS, Zanetti ACB, Bernardes A, Laus AM, Pereira LRL. Potentially hazardous drugs: identification of risks and error prevention barriers in intensive care. *Texto Contexto Enferm* [Internet]. 2018 [cited 2019 Mar 28];27(2):e5710016. Available from: <https://doi.org/10.1590/0104-07072018005710016>

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CONFLICT OF INTEREST

There is no conflict of interest.

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