

# Assessment of continuing education effects for nursing in a hospital organization

Avaliação dos efeitos da educação permanente para enfermagem em uma organização hospitalar  
Evaluación de los efectos de la educación permanente para enfermeros en una organización hospitalaria

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Program evaluation; Continuing education; Education, nursing, continuing; Self assessment; Hospital, teaching

## Descritores

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## Descriptores

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## Abstract

**Objective:** To assess nursing continuing education effects in a hospital organization.

**Methods:** An assessment study, whose data collection took place from May to September 2016 from the application of a Likert-type tool to the 147 nursing professionals participating in a continuing education program of a teaching hospital in southern Brazil. Quicktapsurvey®, an electronic platform, was used with tablets. Data were analyzed using software R and Statistical Package for the Social Sciences®.

**Results:** There was a positive effect, indicating that the knowledge and skills acquired in the educational actions proposed by the continuing education program were transferred to the work context.

**Conclusion:** The use of an assessment tool was effective to support program planning and performance in the research setting and may contribute to other hospital organizations in similar situations.

## Resumo

**Objetivo:** Avaliar os efeitos de um programa de educação permanente em enfermagem de uma organização hospitalar.

**Métodos:** Estudo avaliativo, cuja coleta de dados ocorreu de maio a setembro de 2016 a partir da aplicação de instrumento tipo Likert aos 147 profissionais de enfermagem participantes de um programa de educação permanente de um hospital de ensino do Sul do Brasil. Utilizou-se uma plataforma eletrônica, Quicktapsurvey®, com uso de tablets. Os dados foram analisados por meio dos softwares R e *Statistical Package for the Social Sciences*®.

**Resultados:** Houve efeito positivo, indicando que os conhecimentos e habilidades adquiridos nas ações educativas propostas pelo programa de educação permanente foram transferidos para o contexto do trabalho.

**Conclusão:** A utilização do instrumento de avaliação mostrou-se efetivo para apoiar o planejamento e execução do programa no cenário da pesquisa e pode contribuir para outras organizações hospitalares em situações semelhantes.

## Resumen

**Objetivo:** Evaluar los efectos de un programa de educación permanente en enfermeros de una organización hospitalaria.

**Métodos:** Estudio evaluativo, cuya recolección de datos ocurrió de mayo a septiembre de 2016, mediante la aplicación de instrumento tipo Likert a los 147 profesionales de enfermería participantes de un programa de educación permanente de un hospital universitario del sur de Brasil. Se utilizó una plataforma electrónica,

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Conflicts of interest: nothing to declare.

Quicktapsurvey®, con uso de *tablets*. Los datos fueron analizados por medio de los softwares R y *Statistical Package for the Social Sciences*®.

**Resultados:** Hubo efecto positivo, que indicó que los conocimientos y habilidades adquiridos con las acciones educativas propuestas en el programa de educación permanente fueron transferidos al contexto de trabajo.

**Conclusión:** La utilización del instrumento de evaluación demostró ser efectivo para apoyar la planificación y ejecución del programa en el contexto de la investigación y puede contribuir para otras organizaciones hospitalarias en situaciones semejantes.

## Introducción

The search for educational processes that follows changes in the workplace world, promoting the transformation of professional practices has been a constant in all areas of knowledge. In the health area, in the Brazilian setting, these processes are related to the Brazilian Continuing Health Education National Policy (PNEPS - *Política Nacional de Educação Continuada em Saúde*).<sup>(1)</sup>

Continuing Health Education (CHE) is the educational approach recognized as the most appropriate to produce changes in professional performance and work contexts, strengthening reflection on action, teamwork and process management skills. CHE carries a polysemic concept that often means different things, but understood in the idea of a set of continuous educational actions to improve and transform work.<sup>(1)</sup>

In this sense, CHE is an intervention, therefore an organized system of action that can encompass in its process several specific training and development actions. However, it is imperative that these practices are included in a broad and sustainable plan. Provided they are linked to the overall strategy of organizational change, they can be targeted at specific groups of workers, such as nursing professionals.<sup>(2,3)</sup>

In hospital organizations, the nursing staff is the largest contingent of workers, about 60%.<sup>(4)</sup> Therefore, the success and effectiveness of a set of educational actions directed at these professionals are related to the positive effects obtained from the transformation of labor practice. In light of the speed with which knowledge and technology are renewed in the area, the reorganization of these actions is becoming a priority.<sup>(5)</sup>

From this perspective, the need to express numerically actions' effect assessment is reinforced. Thus, there will be contribution to data compre-

hensiveness and subsidize changes, detect failures, make adjustments or adjustments perceived as fundamental by the actors involved throughout educational processes.<sup>(6)</sup>

In the international context, from the research publications of Kirkpatrick and Hamblin in the 1970s, studies on educational actions assessment have been consistent. They point out in their results variables that have direct influence on these actions, both for the individual and for the organization.<sup>(7-9)</sup> In Brazil, organizational psychology has been a pioneer in the production of this knowledge. It has the proposal that the set of educational actions be seen by organizations as a system integrated by the three subsystems: needs assessment; planning and performance; and assessment of effects. From the first to the second and from the third to the third, considering the organizational context, subsystems maintain a constant flow of information among themselves. The effect assessment subsystem is primarily responsible for providing information, feedback and continuous improvement of the system.<sup>(10)</sup>

In the nursing area, specifically in relation to continuing education programs, application of effects of educational actions assessment is timely and corresponds to the reaction levels (level of satisfaction of participants in relation to the programming and development of the educational action, while instructor, teaching methodologies, the usefulness of educational action) and learning (degree of assimilation of what was taught). These levels do not provide enough information to proceed with the analysis of the effect of educational actions on work.<sup>(10-12)</sup> Overall, no adequate methodologies or tools are used to analyze the relationship between variables, nor to know what can add value to the individual, the workplace and the organization.<sup>(4-6)</sup>

Therefore, this research was conducted given the low availability of studies and publications related to effect assessment of a set of educational actions under the logic of CHE. Recent studies point to national advances on the theme in these organizations, identified in only three publications in the last decade in the Brazilian setting.<sup>(4,5,13)</sup> Conducting assessments of the effect is analytically and scientifically about the impact of continuing education programs in the field of health. These assessments can contribute to the elaboration of viable proposals for educational practices assessment, considering them as an integrated system of action; therefore, for set effectiveness of continuing education actions in hospital organizations.

In this research, we chose to use the proposal of assessment of effects on amplitude of a set of educational actions. Such effect are defined as the transfer of knowledge and skills acquired in these actions to the work context. They can be measured from a judgment of the nursing professional through self-assessment of work performance indicators;

motivation to perform professional practice; and a favorable attitude towards changing the way the work is carried out.

Given the above, this study aims to assess the effects of a continuing education program in a Continuing Nursing Education (PEPE - *Programa de Enfermagem em Educação Permanente*).

## Methods

### Study design

Assessment study with quantitative approach supported by analysis of effects.<sup>(2)</sup> In this type of study, such an analysis consists of examining the relationship between the intervention and its impact on labor practice. Therefore, there was influence by a continuing education program for nursing professionals. This program consists of a set of 20 educational action themes, extracted from the pedagogical plans that formed it and were executed between September 2015 and March 2016, as presented on Chart 1.

**Chart 1.** List of themes in CHE educational actions

Nº	Themes in educational actions	Methodological resources	WL (min.)	No. of offers from EA	Work shift
1	Antibiotic Therapy	Lecture-collaborative class with the use of audiovisual resources and group dynamics	135	4	MA*
2	Wound assessment and treatment	Lecture-collaborative class, case studies and group discussion	240	3	A
3	Nursing care for pediatric patient on mechanical ventilation	Lecture-collaborative class with the use of audiovisual resources	135	2	MA
4	Nursing care with potential organ and tissue donor	Lecture-collaborative class with the use of audiovisual resources and group dynamics	135	4	MA*
5	Nursing care in cardiopulmonary arrest	Lecture-collaborative class with the use of audiovisual resources and group dynamics	135	4	MA*
6	Nursing care in sepsis	Lecture-collaborative class with the use of audiovisual resources and group dynamics.	135	4	MA*
7	Nursing care in parenteral and enteral therapy	Simulation in service	135	3	MA
8	Nursing care in blood components and blood products transfusion	DL	60	2	DL
9	Palliative and end-stage care	Lecture-collaborative class with the use of audiovisual resources and group dynamics	135	4	MA*
10	Reading and basic interpretation of electrocardiogram	Lecture-collaborative class with the use of audiovisual resources and group dynamics	135	4	MA*
11	Central venous catheter handling	Simulation in servisse	60	2	MA
12	Organization of the nursing work process by the comprehensive care method	In service with group dynamics and lecture and dialogue	60	6	MAN
13	Accident prevention with biological material	Simulation in service	60	6	MAN
14	Prevention of preventable wounds	Lecture-collaborative class with the use of audiovisual resources and group dynamics	135	4	MA*
15	Puncture and manipulation of PVA and CVA in pediatrics	Lecture-collaborative class with the use of audiovisual resources	135	2	MA
16	Transfusion reactions	Lecture-collaborative class with the use of audiovisual resources and group dynamics	135	4	MA*
17	Medication safety	Group discussion	120	2	MA
18	Transfusion safety	DL and mentorship	1200	2	DL
19	Inguinal swab collection technique for surveillance crop collection	Lecture-collaborative class; practical demonstration of the technique in simulation doll	30	38	MAN
20	Mechanical ventilation in adults	Lecture-collaborative class with the use of audiovisual resources and group dynamics	135	4	MA*

\* Offering schedules near shift changes for the participation of night shift professionals. Nº - Number; WL - Workload; Min. - Minutes; EA - Educational Actions; M - Morning; A - Afternoon; N - Night; DL - Distance Learning; PVA - Peripheral Venous Access; CVA - Central Venous Access

## Context

The study was set in a teaching hospital, a supplementary organ of a Brazilian public university. The site was chosen because it has a Continuing Nursing Education Commission (CEPEn - *Comissão de Educação Permanente em Enfermagem*), which is responsible for the planning and execution of the continuing education program for nursing professionals.

## Sample

The sample of research participants was non-probabilistic and intentional. It was not possible to access attendance records of educational actions to identify, from the total of 1,253 nursing professionals of the hospital, those who participated in educational actions of the previous year's continuing education program. Participants were recruited every other day at all hospital care units, from May to September 2016. The following inclusion criteria were adopted: nursing professionals who participated in at least one educational action of PEPE; and, as exclusion criteria: nursing professionals who were on vacation, had sick leave or maternity leave during data collection.

## Variables and data collection

For data collection, a validated measuring tool was used that considers participants' self-assessment perspective on the effects produced by the program. This tool makes it possible to assess the wide effect of a set of educational actions that have convergent objectives and results, in line with the type of intervention proposed by CEPEn in the study setting.

Quicktapsurvey<sup>®</sup> was used to register the six participant characterization data (sex, age, professional class, level of education, length of service in the hospital, unit in which they work); the list of the 20 themes of the educational actions developed, so that they could indicate whether or not they had participated in these actions; and 12 statements of the validated tool (ordinal variables). This platform allowed the collection of data on tablets handled by participants, through touchscreen technology application without the

need for internet connection at the time of data collection.

Tool data was securely stored on the platform, transmitted in its entirety to a database as soon as the tablets were connected to the internet and automatically tabulated. Thus, it was possible to analyze the responses immediately after collection and generate two types of reports: one in spreadsheet format in the Microsoft Excel<sup>®</sup> program and another descriptive containing graphs.

## Statistical analysis

Numerical responses from participants' characterization data were submitted to descriptive and exploratory analysis. To calculate the means, medians and standard deviation of the 12-statement tool, there were five response options with a standardized score from one to five, according to the Likert scale: five – I totally agree, four – I agree; three – I neither agree nor disagree; two – I disagree a little; one – I totally disagree.

To facilitate the analysis of effects, tool statements were grouped into categories. Thus, it was possible to verify separately the improvement in work performance (statements from one to seven), motivation to perform work activities (statements eight and nine) and attitude favorable to the modification of the way of performing work (statements from 10 to 12).

The presence of an association between the tool's performance, attitude and motivation categories were investigated by means of the Spearman correlation coefficient among sex, age (years), working time in the institution (years), number of training sessions performed in the last 12 months, work shift and professional class.<sup>(14)</sup>

The analyzes were performed using the Statistical Package for the Social Sciences<sup>®</sup> (SPSS Inc., Chicago, IL, USA - version 19.0) and R (RCore Team 2016) statistical programs. P values referring to the tests used were considered statistically significant when less than 0.05.

## Ethical aspects

To enable data collection, the research was submitted to the Research Ethics Committee of the hospital. It



was approved on November 9, 2015 under Opinion 1,314,240 and CAAE (*Certificado de Apresentação para Apreciação Ética - Certificate of Presentation for Ethical Consideration*) 50115515.8.0000.0096. Data collection occurred only by participants signing a Free and Informed Consent Term (FICT).

## Results

357 nursing professionals were recruited, but 147 agreed to participate and met the eligibility criteria. Of these, 41 (27.89%) were nurses, 56 (38.1%) nursing technicians and 50 (34.01%) nursing assistants. The largest participation was observed in critical units, with 79 (53.74%) participants, followed by inpatient units with 44 (29.93%); surgical units with 20 (13.61%); and, finally, outpatient units with 4 (2.72%).

Regarding the sample composition of the 147 nursing professionals, 120 (81.63%) were female and 27 (18.37%) male. Regarding the distribution by work shift, 82 (55.78%) were in the afternoon, 47 (31.97%) in the morning and 18 (12.24%) in the afternoon. The mean age of participants was 42.4 years, with standard deviation of 9.87 years. The minimum age observed was 23 years and the maximum age 65 years. Working time at the insti-

tution ranged from two years to 36 years, averaging 13.5 years and standard deviation equal to 9.6 years. Regarding the number of participations in educational actions, the minimum was one and the maximum of 19, with a median of four.

Table 1 shows the distribution of self-assessment responses about the effects of PEPE. Overall, there was a positive amplitude effect, since the median of the answers corresponded to number four in reference to the alternative “agree” and the standard deviation indicated homogeneity of opinion among participants, that is, there was little variability in relation to the data set. and as a function of the mean of each of the 12 statements.

Regarding factors associated with the effects between demographic and functional characteristics and PEPE, these data are presented in Table 2.

There was statistical significance between the number of participations in educational actions, where the p value was <0.05 in all categories (performance, motivation and attitude). It was found that the higher the age, the better the effect assessed on motivation. As for the ‘professional class’, there was a positive correlation with the effect related to performance. In both characteristics, p value corresponded to 0.04. Other demographic and functional characteristics were weakly associated or did not show any association.

**Table 1.** Distribution of responses obtained from the self-assessment questionnaire about the effects of PEPE

Statement	TAS(5) n(%)	AS(4) n(%)	DNAS(3) n(%)	DS(2) n(%)	TDS(1) n(%)	Mean	Md	SD
1 I often use in my current work what was taught in PEPE.	45(30.61)	75(51.02)	12(8.16)	12(8.16)	3(2.06)	4	4	0.95
2 I take the opportunities I have to put into practice what was taught at PEPE.	60(40.82)	72(48.98)	7(4.76)	5(3.4)	3(2.04)	4.23	4	0.85
3 The skills I learned in PEPE made it assertive in my work and in activities related to the content of continuing education actions.	49(33.33)	82(55.78)	9(6.12)	6(4.08)	1(0.68)	4.17	4	0.77
4 I remember well the content taught at PEPE.	28(19.05)	74(50.34)	18(12.24)	24(16.33)	3(2.04)	3.68	4	1.03
5 When I apply what I learned at PEPE, I do my job skillfully.	54(36.73)	76(51.7)	10(6.8)	6(4.08)	1(0.68)	4.2	4	0.79
6 The quality of my work has improved in activities directly related to PEPE content.	46(31.29)	69(46.94)	16(10.88)	12(8.16)	4(2.72)	3.96	4	1
7 The quality of my work improved even in those activities that did not seem to be related to PEPE content.	28(19.05)	66(44.9)	32(21.77)	17(11.56)	4(2.72)	3.66	4	1
8 My participation in PEPE has served to increase my motivation for work.	32(21.77)	66(44.9)	27(18.37)	16(10.88)	6(4.08)	3.69	4	1.06
9 My participation in PEPE increases my confidence (I now have more confidence in my ability to do my job successfully).	31(21.09)	67(45.58)	25(17.01)	16(10.88)	8(5.44)	3.66	4	1.09
10 Following my participation in PEPE, I have more often suggested changes in work routines.	26(17.69)	64(43.54)	35(23.81)	12(8.16)	10(6.80)	3.57	4	1.09
11 The PEPE I attended made me more receptive to changes at work.	28(19.05)	81(55.1)	22(14.97)	11(7.48)	5(3.4)	3.79	4	0.95
12 The PEPE I attended benefited my co-workers who learned from me some new skills.	31(21.09)	70(47.62)	29(19.73)	11(7.48)	6(4.08)	3.74	4	1.01

(%) – percentage; Md - Median; SD - standard deviation; TAS - I totally agree with the statement; AS - I agree with the statement; DNAS - I do not agree or disagree with the statement; DS - I disagree with the statement; TDS - I totally disagree with the statement; PEPE – Continuing Nursing Education (*Programa de Educação Permanente em Enfermagem*).

**Table 2.** Association between demographic and functional characteristics and PEPE

Characteristics	Analyses	Motivation		
		Performance	Category	Attitude
Age	Correlation coefficient*	0.10	0.17	0.09
	<i>p value</i>	0.24	0.04	0.28
Working time at the institution	Correlation coefficient*	-0.04	0.08	0.05
	<i>p value</i>	0.68	0.32	0.59
Number of participation in EA in the year (n = 20)	Correlation coefficient*	0.24	0.24	0.35
	<i>p value</i>	0.004	0.004	0.000
Work shift	Correlation coefficient*	-0.09	-0.13	-0.01
	<i>p value</i>	0.259	0.120	0.868
Morning (n=47)	Mean	4.1	4.1	3.7
	Standard deviation	0.7	0.7	0.6
Afternoon (n=82)	Mean	4.0	3.8	3.7
	Standard deviation	0.7	1.0	0.8
Night (n=18)	Mean	3.7	3.5	3.3
	Standard deviation	1.1	1.4	1.3
Sex	Correlation coefficient*	-0.03	-0.02	-0.09
	<i>p value</i>	0.696	0.821	0.298
Female (n=120)	Mean	4.0	3.9	3.8
	Standard deviation	1.0	1.1	1.0
Male (n=27)	Mean	4.0	3.8	3.7
	Standard deviation	0.7	1.0	0.8
Occupation	Correlation coefficient*	0.17	0.08	0.00
	<i>p value</i>	0.04	0.36	0.96
Nurse (n=41)	Mean	3.9	3.6	3.7
	Standard deviation	0.7	1.0	0.8
Nursing tech.(n=56)	Mean	4.2	3.9	3.7
	Standard deviation	0.8	1.1	1.0
Nursing assist. (n=50)	Mean	3.9	3.8	3.7
	Standard deviation	0.8	1.0	0.8

\* Spearman correlation coefficient; EA - Educational Action; Tech - Technician; Assist. - Assistant.

## Discussion

The assessment proposed in this research found positive effects, as it made it possible to verify the transfer of knowledge and skills acquired in PEPE to the work context. To this end, such assessment may serve as a reference for other studies and as a model for decisions on educational design, educational management, and CHE assessment of similar hospital organizations.

Regarding the data related to the demographic variables of the research participants, there is a predominance of young adults with differences in training and working time, as expected. They correspond to data from the nursing workforce, proven in other research and recently referenced in the literature.<sup>(14,15)</sup>

Effect assessment had a positive impact of knowledge and skill transfer on all statements (Likert - strongly agree and over 60% agree). It behaved homogeneously with low standard deviation,

corroborating another study that was conducted with 75 nurses participating in a training of a hospital organization.<sup>(5)</sup>

It was observed that the motivation category for performing occupational activities and the statement 10 (suggestions for changes in work routines) related to the attitude category were the ones that produced the lowest values (Likert - totally agree and agree). This can be explained partly by inadequate working conditions that reflect motivational and attitude levels during professional practice.<sup>(16)</sup> A study of 114 nursing workers revealed that the physical and human institutional conditions of organization and maintenance of the health service contribute to the low effectiveness of educational actions and/or their small effect. These are situations that leave workers dissatisfied and with little motivation to work.<sup>(17)</sup>

It is noteworthy that the greater the number of participations in educational actions, the more significant was the effect on performance,

attitudes and motivation. The older the population studied, the better the effect on motivation to perform work activities. Regarding the professional classes, the effect on the category related to the improvement in work performance was significant. Other demographic and functional characteristics were not predictors of effects. Therefore, it is suggested, as in the literature, that further research be developed to confirm the relationship among these variables.

Studies point to the need for the joint application of items related to in-depth effect assessment; and support the transfer of educational actions.<sup>(18)</sup> In-depth effect assessment items assess the direct and specific effects of educational actions taken from the objectives of the curriculum on the subsequent behavior of the individual in his or her position within the organization. Support items for the transfer of educational actions, on the other hand, assess the support received by the professional to apply, at work, the knowledge and skills acquired in educational actions.<sup>(5,19)</sup>

As limitations of the research, there was scarce literature on CHE effect assessment, particularly in the hospital area. This fact made the proposed analysis challenging. It was difficult to delineate the population of nursing professionals who participated in PEPE's educational actions, due to the impossibility of accessing the archiving place of the frequency records of these actions. This situation did not allow a probabilistic delimitation of the study sample.

## Conclusion

The results of this study showed that the positive effects pointed out in this analysis result from PEPE, since there is a transfer of acquired knowledge and skills to the work context. In conclusion, limits and horizons widening potential of the measurement tool used for future investigations were considered. They can be used to analyze their effects on amplitude and depth, supporting transfer as recommended for this program. They can be used to foster the elaboration of CHE proposals as an organized sys-

tem of action, therefore innovative and in line with the current working world of health and nursing.

## Collaborations

Sade PMC, Peres AM, Zago DPL, Matsuda LM, Wolff LDG and Bernardino E contributed to the study design, data analysis and interpretation, article writing, relevant critical review of intellectual content and approval of the final version to be published.

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