Validation of the Nursing Work Index-Revised among nursing aides and technicians

Validação do *Nursing Work Index-Revised* entre auxiliares e técnicos de enfermagem

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Abstract

Objective: To assess the reliability and validity of the Brazilian version of the Nursing Work Index-Revised among nursing aides and technicians.

Methods: A methodological cross-sectional study was conducted in two teaching hospitals. The sample consisted of 150 subjects and data were collected with the use of a personal and professional information sheet, the Brazilian version of the Nursing Work Index-Revised for nursing aides and technicians and the Maslach Burnout Inventory.

Results: Cronbach's alpha varied from 0.58 to 0.77 among the subscales of the Nursing Work Index-Revised and all its subscales obtained significant correlation with the subscales of the Maslach Burnout Inventory and the "job satisfaction," "intention to leave the job," and "nurse perception of quality of care" variables.

Conclusion: The instrument presented reliability and validity for evaluating the practice environment of these professionals.

Resumo

Objetivo: Avaliar a confiabilidade e validade da versão brasileira do *Nursing Work Index – Revised* entre auxiliares e técnicos de enfermagem.

Métodos: Estudo metodológico, transversal, realizado em dois hospitais de ensino. A amostra foi composta por 150 sujeitos e para a coleta de dados foram utilizados: a ficha de caracterização pessoal e profissional, a versão brasileira do *Nursing Work Index - Revised* para auxiliares e técnicos de enfermagem e o Inventário de *Burnout* de *Maslach*.

Resultados: O coeficiente alfa de *Cronbach* variou de 0,58 a 0,77 entre as subescalas do *Nursing Work Index - Revised* e todas as suas subescalas obtiveram correlação significativa com as subescalas do Inventário de *Burnout* de *Maslach* e as variáveis "satisfação com o trabalho", "intenção de deixar o emprego" e "percepção da qualidade do cuidado".

Conclusão: O instrumento demonstrou confiabilidade e validade satisfatórias para avaliar o ambiente da prática desses profissionais.

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Introduction

The characteristics of the practice environment of nursing professionals constitute important factors that can affect the quality and safety of care. The presence of organizational attributes, such as autonomy, control over the environment and collaboration between physicians and nurses can make a practice environment more favorable of the development of care and also contribute to better outcomes for the patient, the professional and the institution.[1-4]

For the patient, these results translate not only into satisfaction with the care received, but reduced mortality rates[1,2,5,6] and a reduction of adverse events of care, such as medication errors, falls and hospital-acquired infections.[7]

For the institution, the absence of characteristics that favor professional practice directly influences the rise of turnover and absenteeism rates.[8] As for professionals, these characteristics result in greater job satisfaction,[8] reduced intention to leave the job and lower levels of burnout.[8]

Burnout is a syndrome composed of three related dimensions – "emotional exhaustion," "depersonalization" and "reduced personal accomplishment," which develop in response to physical and emotional stress in the workplace.[9,10] High levels of burnout among nursing professionals are associated to job dissatisfaction, intention to leave the job and patients' dissatisfaction with the care received, which directly influence the quality of the care provided and patient safety.[5]

In light of this context surrounding the professional practice of nursing, some instruments have been developed to measure organizational components of the nursing practice environment, among them, the Nursing Work Index – Revised (NWI-R). The objective of this instrument is to evaluate the presence of environmental characteristics that favor professional practice.[1]

The NWI-R has been identified as one of the instruments for measuring practice environment. It is used in several countries and, based on cross-sectional studies, is capable of relating organizational structure and nursing practice to healthcare service outcomes.[11]

Originally, the NWI-R was developed and validated for the Brazilian culture with a sample of nurses[12,13] and, later on, it was submitted to content validation in order to be used with nursing aides and technicians.

Taking into consideration that, in Brazil, nursing actions are developed as a team and that many of the care outcomes are related to the care provided by a nursing aides and technicians, the aim of the present study was to evaluate the reliability and validity of the Brazilian version of the NWI-R among these professionals.

Methods

This is a cross-sectional study developed in the inpatient units of two teaching hospitals in the state of São Paulo, Brazil. Hospital A provides tertiary level care, treating high-complexity patients, and has 410 beds. Hospital B provides maternal-infant healthcare, at a secondary level, and has 123 beds. Both institutions developed care, teaching and research activities at the time of the study.

The sample comprised nursing professionals directly involved in patient care, with at least three months of experience, and who were not on vacation or leave of absence. Because this was a validation study, a minimum of ten subjects per item on the instrument was considered for sample size calculation. This calculation resulted in a total of 150 subjects, proportionally distributed among the places of study.

Data were collected using: a) a personal and professional information sheet; b) the Brazilian version of the Nursing Work Index-Revised (NWI-R) for nursing aides and technicians; c) the Maslach Burnout Inventory (MBI).

a) The personal and professional information sheet included data such as gender, age, martial status, education, time of experience and weekly workload and three variables: "job satisfaction," "nurse perception of quality of care" provided to

the patient and "intention to leave the job" in the next year. The variables "job satisfaction" and "nurse perception of quality of care" were evaluated using a four-point Likert scale, in which higher scores represented, respectively, higher satisfaction and better perception of quality of patient care. The variable "intention to leave the job" was evaluated using an analog visual scale from zero to ten. The greater the score on this scale, the greater the intention to leave the job in the next year.

b) The Brazilian version of NWI-R consists of 15 items distributed among four subscales: "autonomy" (five items), "physician-nurse relationship" (three items), "control over the environment" (seven items) and "organizational support" (ten items), derived from the three original subscales.[1]

A Likert-type measuring scale ranging from one to four points was used. Lower scores represent a greater presence of favorable attributes for nursing professional practice. The scores for each subscale can be obtained by calculating the mean of the subjects' scores on each item, and can vary from one to four points, being that higher scores represent unfavorable environments.[1] The Brazilian version of the NWI-R scale presents satisfactory validity and reliability indexes.[13]

c) The aim of the MBI is to measure the level of burnout in workers and it was adapted and validated for the Brazilian culture. It comprises 22 items divided into three subscales: "emotional exhaustion" (nine items), "depersonalization" (five items) and "decreased personal accomplishment" (eight items). It uses a Likert scale ranging from one to five points. Each subscale is scored by calculating the sum of the subject's response for each of the items.

For the "emotional exhaustion" and "depersonalization" subscales, higher scores express a strong feeling of emotional depletion and depersonalization. The "decreased personal accomplishment" subscale presents an inverted score with respect to the other subscales, thus higher scores indicate higher levels of personal accomplishment. In sum, a high level of burnout is represented by high scores on the "exhaustion" and "depersonalization" subscales and low scores on

the "reduced personal accomplishment" subscale.[11] Burnout level is classified by calculating the tertiles for each MBI subscale.

Data were collected between the months of September 2012 and February 2013. Nursing aides and technicians were approached at their workplaces, and those who agreed to participate were instructed to answer and hand in the instruments to one of the researchers in a sealed envelope.

The data obtained were charted using Microsoft® Excel 2010 for Windows and analyzed using the Statistical Analysis System for Windows® (SAS), version 9.1.3. For evaluating the reliability of the Brazilian version of the NWI-R for nursing aides and technicians, we used internal consistency analysis, and values higher than 0.60 for Cronbach's alpha were considered satisfactory.

Validity was evaluated by obtaining correlations among the Brazilian version of the NWI-R for nursing aides and technicians, the MBI and the "job satisfaction," "intention to leave the job" and "nurse perception of quality of care" variables, expressed by the Spearman's correlation coefficient. Values for this coefficient can range from -1 to +1, and values close to zero indicate an absence of correlation. The closer to +1, the stronger and more positive the correlation, and the closer to -1, the stronger and more negative the correlation. The level of significance adopted for all statistical tests was 5% ($p < 0.05$).

The development of this study complied with national and international ethical guidelines for studies involving human beings.

Results

The sample consisted of 150 nursing aides and technicians (Table 1). The participants' mean age was 37.7 years (SD± 10). Mean time of work experience in the unit was 7.0 years (SD± 7) and in the institution, 7.9 years (SD± 7.5). Mean weekly workload, together with that of other jobs, was 45.5 hours (SD±14.55), and the mean number of patients per professional was 6.32 patients (SD± 3.43).

Table 1. Personal and professional characteristics of Nursing Aides and Technicians

Variables	Nursing aides and technicians	
	Simple	%
Work place		
Hospital A	115	76.7
Hospital B	35	23.3
Gender		
Female	128	85.3
Male	22	14.7
Marital Status		
Married	75	50.0
Simgle	55	36.7
Divorced/Separated	18	12.0
Widowed	2	1.3
Complementary training		
None	111	74.0
Complete nursing undergraduate degree	22	14.7
Nursing undergraduate degree in course	17	11.3
Type of work contract		
CLT	146	97.3
CLE	4	2.7
Work shift		
Night	84	56.0
Morning	47	31.3
Afternoon	19	12.7
Other jobs		
No	110	73.3
Yes	40	26.7

CLT – Consolidation of Labor Laws; CLE – Consolidation of Laws referent to supernumerary State workers

Regarding job satisfaction, 106 subjects (70.7%) reported being satisfied, 12 (8%) were very satisfied and 32 (21.3%) were unsatisfied and very unsatisfied with their current job. Considering nurse perception of quality of care, most participants (n= 92, 61.3%) considered it to be good, 52 (34.7%) very good and six (4%) evaluated patient care as poor. Regarding the variable intention to leave the job in the next twelve months, the mean was 2.38 (SD± 3.57).

Table 2 presents the means and values of NWI-R subscale reliability, regarding the analysis of the practice environment.

Reliability was analyzed for each subscale of the MBI: "emotional exhaustion" (α = 0.92), "depersonalization" (α = 0.73) and "reduced personal accomplishment" (α = 0.72).

The evaluation of the validity of the NWI-R subscales and the variables "job satisfaction", "intention to leave the job" and "nurse perception of quality of care" resulted in significant correlations (Table 3).

Table 2. Mean, standard deviation and Cronbach's α coefficient of the Brazilian version of the Nursing Work Index – Revised for Nursing Aides and Technicians

NWI - R	Mean	SD	Cronbach'α
Autonomy	2.04	0.56	0.58
Nursing team and physician relations	2.25	0.71	0.82
Control over the work environment	2.40	0.65	0.78
Organizational support	2.22	0.52	0.77

Table 3. Spearman's correlation coefficient for the Brazilian version of the Nursing Work Index – Revised for nursing aides and technicians, and the Maslach Burnout Inventory, work satisfaction, intention to leave the job and nurse perception of quality of care

NWI-R	Emotional exhaustion	Depersonalization	Reduced personal accomplishment	Job satisfaction	Intention to leave the job	Nurse perception of quality of care
Autonomy	0.49**	0.33**	-0.18*	-0.35**	0.20*	-0.31**
Nursing team and physician relations	0.44**	0.35**	-0.30*	-0.44**	0.16*	-0.21*
Control over the work environment	0.64**	0.40**	-0.29*	-0.48**	0.19*	-0.37**
Organizational support	0.62**	0.43**	-0.27*	-0.50**	0.25*	-0.34**

*p<0,05; **p<0,0001

Discussion

In this study, like in others conducted with nursing professionals, the profile of participants was that of young female adults, which is explained by the profession's historic condition.[12,14] Although a small part of these professionals had completed or were completing their undergraduate nursing degree, most of them declared not having any complementary training. This finding raises concern when we consider the technological innovations and the demanding labor market involved in professional training and qualification. We emphasize the importance of conducting studies on the professional training of nursing aides and technicians in Brazil, for these professionals compose the largest contingent of professionals responsible for the outcome of patient care.

Our findings suggest that the participants partly agreed with the hypothesis that the environment has attributes favorable to their professional practice. It is important to highlight "autonomy," which obtained the lowest mean in relation to the other subscales. A different study conducted in an intensive care unit presented similar means to those of the present study, however, the subscale regarding the relationship between physicians and nursing aides and technicians showed the lowest score. These differences can be a reflection, in part, of the different contexts of the nursing professional practice.

Regarding the reliability of the Brazilian version of the NWI-R for the population in question, the "autonomy" subscale presented the lowest coefficient, as was the case in other national and international studies. This fact demonstrates that the items composing this subscale may not reflect the concept of autonomy in place in the practice environment.[1]

The practice environment was significantly correlated with "job satisfaction," "intention to leave the job," and "nurse perception of quality of care" and burnout. This means that professionals are more satisfied in environments that are favorable to nursing practice. This satisfaction can reduce intention to leave the job and lead professionals to have an improved perception of quality of patient care, and present lower levels of burnout.[1,3,12,14,15]

Conclusion

The Brazilian version of the NWI-R presented satisfactory reliability, with exception to the 'autonomy' subscale. The validity of the instrument was also confirmed when we observed that the better the professional practice environment, the lower the level of burnout and intention to leave the job, the higher the job satisfaction and the higher the perceived quality of care presented by nursing aides and technicians.

Collaborations

Marcelino CF collaborated with the study's conception, research execution and drafting of the article. Alves DFS contributed with the project's conception, relevant critical review of intellectual content, drafting of the article and final approval of the version to be published. Gasparino RC participated in the relevant critical review of intellectual content, drafting of the article and final approval of the version to be published. Guirardello EB collaborated with the study's conception, relevant critical review of intellectual content and final approval of the version to be published.

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