

Construction and validation of a tool to assess nursing interpersonal relations

Construção e validação de instrumento para avaliar as relações interpessoais na Enfermagem
Construcción y validación de instrumento para evaluar las relaciones interpersonales en la Enfermeira

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ABSTRACT

Objective: construct and validate a tool to identify the factors that influence interpersonal relations and the health of nursing workers in a University Hospital in the South of Brazil. **Method:** methodological study, in nine steps. The face validation was carried out, with the participation of five experts, professor nurses doctors in Nursing, content with 26 nurses, *stricto sensu* Nursing Postgraduate students, and the validation of the construct was performed through a quantitative approach with 213 nursing workers. We used the exploratory factorial analysis and the Cronbach's Alpha in the validation of the construct. **Results:** the tool consisted of 29 questions and six constructs were identified. The Cronbach's Alpha value .879 showed satisfactory internal consistency. **Conclusion:** the tool was valid and reliable for use in the assessment of interpersonal relations among nursing workers in Brazilian University Hospitals.

Descriptors: Interpersonal Relations; Occupational Health; Nursing; Nursing, Team; Validation Studies.

RESUMO

Objetivo: construir e validar um instrumento para identificação dos fatores que influenciam as relações interpessoais e a saúde dos trabalhadores de enfermagem em um Hospital Universitário no Sul do Brasil. **Método:** estudo metodológico, em nove etapas. Realizou-se a validação de face, com a participação de cinco *experts*, enfermeiros docentes doutores em Enfermagem, de conteúdo com 26 enfermeiros, estudantes da Pós-Graduação em Enfermagem *stricto sensu*, e a validação de construto foi realizada mediante abordagem quantitativa com 213 trabalhadores de enfermagem. Na validação do construto, utilizou-se a análise fatorial exploratória e o Alfa de Cronbach. **Resultados:** o instrumento ficou composto por 29 questões e foram identificados seis construtos. O valor de Alfa de Cronbach ,879 apresentou consistência interna satisfatória. **Conclusão:** o instrumento se apresentou válido e fidedigno para ser utilizado na avaliação das relações interpessoais entre trabalhadores de enfermagem em Hospitais Universitários brasileiros.

Descritores: Relações Interpessoais; Saúde do Trabalhador; Enfermagem; Equipe de Enfermagem; Estudos de Validação.

RESUMEN

Objetivo: construir y validar un instrumento para identificar los factores que influencian las relaciones interpersonales y la salud de los trabajadores de enfermería en un Hospital Universitario en el Sur de Brasil. **Método:** estudio metodológico, en nueve etapas. Se realizó la validación de cara, con la participación de cinco expertos, enfermeros docentes doctores en Enfermería, de contenido con 26 enfermeros, estudiantes de la Postgrado en Enfermería *stricto sensu*, y la validación de construto fue realizada mediante abordaje cuantitativo con 213 trabajadores de enfermería. En la validación del construto, se utilizó el análisis factorial exploratorio y el Alfa de Cronbach. **Resultados:** el instrumento quedó compuesto por 29 cuestiones y se identificaron seis construtos. El valor de Alfa de Cronbach, 879 presentó consistencia interna satisfactoria. **Conclusión:** el instrumento se presentó válido y fidedigno para ser utilizado en la evaluación de las relaciones interpersonales entre trabajadores de enfermería en Hospitales Universitarios brasileños.

Descriptorios: Relaciones Interpersonales; Salud Laboral; Enfermería; Grupo de Enfermería; Estudios de Validación.

INTRODUCTION

Interpersonal relationships may be affected during the development of work among nursing workers in health services due to inadequate management and organization of the work sectors⁽¹⁾. Interpersonal relations have complicated particularities, since they involve living among different people, who are exposed to daily competitiveness⁽²⁾. Work, when structured in a strict and hierarchical way, with predominance of power, enhancement of goals and the weakening of the relationship, presents as a consequence the constant sickness of the workers and the temporary or definitive separation⁽³⁾.

Conflicting interpersonal relationships are a contributing factor in the development of psychic problems⁽⁴⁾, and nursing workers are susceptible to the onset of depression as a result of these conflicting relationships in the work environment⁽⁵⁾. The presence of negative relationship and disrespect to the skills of nursing workers in relation to the other members of the team are factors that favor the emergence of Burnout Syndrome⁽⁶⁾.

The manifestation of situations of suffering at work often comes from interpersonal relationships. The work environment is where relationships occur through abusive behavior, psychological violence, power relations and incentives to competitiveness. In addition, any relationship can cause situations of mistrust, injustice and source of suffering⁽⁷⁾.

It is therefore necessary within the organization in the context of interpersonal relationships to understand the importance of socialization, respect, dialogue, responsibility and spirit of joy⁽²⁾. The strengthening of the bond of friendship and companionship are contributing factors for the improvement of workers' mental health⁽⁷⁾.

The importance of the interpersonal relationship within the organization is evidenced, since it is a fundamental part of the coexistence that makes working more pleasant and allows a better resourcefulness regarding the aspects that determine interpersonal conflicts, as well as increases motivation and both professional and institutional growth encouragement⁽²⁾, and is related to quality of life and better establishment of health care⁽⁸⁾.

The reasons for this study are based on the fact that to date there are no psychometric standards that identify factors that influence interpersonal relations at work, physical and emotional exhaustion, and behavioral changes resulting from interpersonal conflicts and behaviors of colleagues and heads. In this way, the construction and validation of a tool can contribute to subsidize strategic actions in the work environment to seek improvements in the health of workers and, consequently, in the quality of care.

OBJECTIVE

This study aims to construct and validate a tool to identify the factors that influence interpersonal relations and health of nursing workers in a University Hospital in the South of Brazil.

METHOD

Ethical aspects

This study is part of the macroproject entitled "*Relações interpessoais e a saúde do trabalhador de enfermagem*", which was approved

by the Research Ethics Committee of Health of the *Universidade Federal do Rio Grande*. The study is in accordance with Resolution 446/12 of the National Health Council (*Conselho Nacional de Saúde*). Participants signed the Free and Informed Consent Form.

Design, place of study and period

This is a methodological study for the construction and validation of a tool that contemplates the specificities of interpersonal relations at work and its influence on nursing workers health. In view of the need to select standards for the construction of an assessment tool, it was decided to use nine steps⁽⁹⁾, presented in Figure 1.

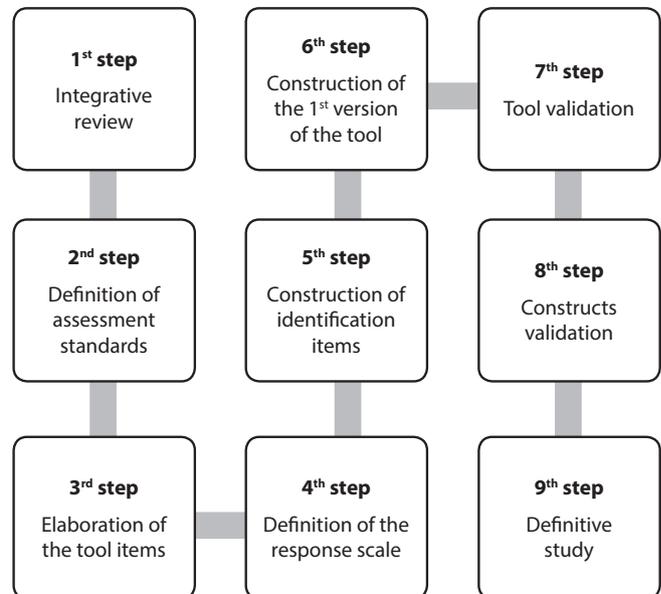


Figure 1 - Steps of the tool elaboration, Rio Grande, Rio Grande do Sul, Brazil, 2016

Population and sample: inclusion and exclusion criteria

The study was developed in a University Hospital (UH) located in a municipality south of Rio Grande do Sul. The UH has 355 nursing workers, of these 83 nurses, 129 technicians, and 143 nursing assistants.

To select the participants, the following criteria were used to include the participants: being a nurse or a nursing technician or nursing assistant; be part of the UH staff for a minimum period of three months; and be active in the services of direct or indirect care for the patient. The exclusion criteria of the participants were being on vacation, absence or leave.

The sample was calculated through the StatCalc program of EpiInfo version 7, using the confidence level of 95%. Thus, a minimum sample size of 184 participants was obtained. By using non-probabilistic sampling for convenience, the sample comprised 213 participants, of which 54 were nurses, 69 nursing technicians and 90 nursing assistants.

Study protocol

In the first stage of the elaboration of the tool, an integrative review was carried out in national and international databases in

order to search for scientific evidence produced on the subject, allowing for greater clarity and less dispersion regarding the content investigated.

The second step was constructed in view of the lack of a scale or other type of tool that could be adapted for the analysis of interpersonal relations and health of nursing workers. It was decided to build a tool for this purpose, defining the assessment standards.

For the elaboration of the items of the tool, in the 3rd step, questions were raised to compose the tool, avoiding the use of long, negative sentences, ambivalence in its interpretation and difficult to read. Initially, 120 questions were built and 40 were chosen to be part of the tool, corroborating with the author's criteria⁽⁹⁾.

In the 4th step, we sought the best way to measure responses, choosing a five-point Likert Scale with response intervals ranging from Never, Almost Never, Sometimes, Almost Always, Always. In the construction of the identification items, in 5th step, the anonymity of the participants was preserved as much as possible so that they did not feel constrained. Thus, questions were built that did not identify the characteristics of the participants.

The 6th step was accomplished after reading, elaborating, constructing and deconstructing the items, constructing the first version of the questionnaire with 40 questions. The 7th step, validation of the tool, was performed in three steps: face validity, content validity and construct validity (corresponding to the 8th step).

The tool was submitted for review by a committee composed of five experts, who were nurses teaching doctors in Nursing. In this type of validity, it is intended to assess the adequacy of the sample of items to the content to be analyzed, that is, it concerns the language and the way in which the content is being presented⁽⁹⁾.

In addition, judgment regarding the representativeness of the tool questions were made by 26 postgraduate students in Nursing at a Public University who had experience in care, with the objective of improving the final version of the tool reviewed by the experts, analyzing the time and suggestions for making the issues more comprehensible. They were invited to participate via e-mail and in the classroom. The tool was delivered with a maximum time of three working days for the collection.

In order to guarantee the construct validity and reliability, in the 8th step, after the application of the tool in the selected sample, two statistical tests were performed: the exploratory factorial analysis and the Cronbach's Alpha. And the 9th step refers to the dissemination and discussion of the results found.

Analysis of results and statistics

For the analysis and organization, the quantitative data were typed by double typing in a Microsoft Excel 2013 worksheet and then submitted to statistical analysis using the Statistical Package for Social Sciences (SPSS) software version 21.

The exploratory factorial analysis was conducted by the main axes extraction method, Varimax Rotation, considering the degree of association between the variables, found through factorial loads (>.500). We used the internal consistency analysis and the Cronbach's Alpha for each dimension to test the reliability.

RESULTS

The tool was assessed by five experts with Doctorate Degree in Nursing and knowledge on the subject, of these three professors of Public Universities, one professor of Private University and another of an *Instituto Federal de Educação, Ciência e Tecnologia*, critically assessed the language, presentation and relevance of the items of the tool.

According to the face validity of the tool, the committee of experts identified agreement between the items of the scale, assessing them and agreeing with the language, presentation and pertinence of all the items and how they were formulated, so that the questions have undergone few modifications.

In question 7, "The behavior and aggressive tone of some colleagues harms interpersonal relationships" it has been suggested to add the term "disrespectful behavior". In question 10, "Differences of opinion and professional conduct weaken interpersonal relations" was proposed as follows: "Disagreements weaken interpersonal relations". For question 12, in view of its breadth, "Ethical problems generate interpersonal conflicts" was replaced by "Disrespect for ethical aspects involving patient care impairs interpersonal relationships". Concerning question 17, "The support of the leadership motivates me and boosts our interpersonal relations", there was questioning about the presence of ambiguity, thus, it was suggested "The support of the leadership favors the interpersonal relations". In questions 18 and 19, "I present interpersonal conflicts in my team" and "I have difficulty relating to doctors"; it was suggested to replace at the end of the sentences with "nursing team". Finally, in question 40, "I feel stressed due to the difficulties in the relationship with the medical team", it was suggested to replace "medical team" with "multiprofessional team".

In terms of content validity, 26 undergraduate nurses from the Master's or Postgraduate course participated in the pre-test, allowing the confirmation of the items on the scale that represented the content analyzed, so that no changes were required in the writing of the questions. When asked about the difficulties and facilities in completing the tool, 24 participants considered the items of the tool to be easy to understand and to step. However, two participants suggested reducing the spacing and leaving the tool in two sheets instead of three. The time to fill the tool ranged from eight to twelve minutes.

After the assessment of the experts and the accomplishment of the pre-test, the tool was applied in the sample selected for validation of the constructs and obtaining the results. Regarding the 213 participants characteristics, it was verified that nursing workers had, on average, 43 years (SD = 8.95), with a minimum age of 23 years and a maximum of 68 years; a predominance of female sex (89.7%).

Regarding the construct validity, the 40 questions of the tool were submitted to the exploratory factorial analysis (between chunks), aiming to verify the validity of the tool. Thus, the first round excluded two questions (13 and 31) because they did not fix any factor; in the second round, a question (10) was deleted; in the third case, question 27 was excluded; in the fourth, no. 30 was excluded; and in the fifth, number 16. These questions were excluded because they presented inferior factorial loads

.500. In the sixth round, two questions (22 and 9) were excluded because they did not fix any factor. Regarding the seventh round, two questions were excluded (29 and 18) because of low load in the constructs and in the eighth and last round, question 3 was excluded, since it formed an isolated chunk. Thus, there were 11 excluded questions.

After phase-out of the correlations by chunk, the tool consisted of 29 questions and six constructs. Each construct received a conceptual definition with the objective of measuring its attributes, since they cannot be directly observable⁽⁹⁾, as represented in the Chart 1.

Table 1 shows the values of commonalities, the factorial loads of each construct formed and the explained variance. The reliability of the constructs was tested by Cronbach's Alpha calculation, identifying a satisfactory internal consistency value of the tool of .879. The other coefficients varied between .627 and .904, values considered high for exploratory studies⁽⁹⁾.

Chart 1 - Description of the formulated constructs and item numbers that compose them, Rio Grande, Rio Grande do Sul, Brazil, 2016

Construct	Construct definition	Nº of items
Physical and emotional exhaustion due to interpersonal relationships	Characterized by psychological and physical symptoms resulting from troubled and conflicting interpersonal relationships. Typical of stress ⁽¹⁰⁾ and Burnout Syndrome ⁽¹¹⁾ .	9
Behavior factors affecting interpersonal relationships	Set of observable reactions in individuals, most often by tone of voice, conduct of indifference and aggressiveness, lack of dialogue and presence of gossip in the work environment among the team, influencing the triggering of interpersonal conflicts ⁽¹²⁾ .	6
Perception of emotional instability in relation to the difficulties of the relationship	Refers to the perception of their emotional state in the face of difficulties in interpersonal relationships ⁽⁵⁾ .	5
Affective constructions for strengthening interpersonal relationships at work	The establishment of professional bonds aims to mature interpersonal team relationships, to promote individual and collective growth, facilitating the management of conflicts ⁽¹⁴⁾ .	3
Self-perception of relational difficulties	Refers to the perception of the difficulties of the interpersonal relationship with the managerial, nursing and multiprofessional team ⁽¹⁵⁾ .	3
Management actions as a positive factor for interpersonal relations	Contributing factors in nursing management work, in which this activity involves the planning of actions ⁽¹⁶⁾ .	3

Table 1 - Exploratory factorial analysis (Rotation Varimax) with nursing workers, Rio Grande, Rio Grande do Sul, Brazil, 2016 (N=213)

Questions	Chunk	Components					
		F1	F2	F3	F4	F5	F6
Item-33	.675	.814	.089	.045	.021	-.023	-.036
Item-36	.621	.751	-.060	.176	-.132	.026	-.072
Item-35	.624	.749	.041	.084	-.017	.227	.048
Item-37	.544	.721	.056	-.006	-.005	.136	.043
Item-34	.686	.720	.062	.331	.085	.215	.018
Item-32	.552	.678	.038	.276	-.045	-.005	-.111
Item-26	.626	.675	.180	.358	.023	.025	-.095
Item-25	.653	.610	.749	.457	.049	.168	-.138
Item-24	.578	.554	.174	.425	.139	.125	-.158
Item-7	.746	.087	.851	.096	.047	.008	.051
Item-8	.722	.047	.838	.078	.056	.012	.093
Item-6	.667	.053	.795	.110	.051	-.032	.126
Item-5	.635	.025	.760	.149	-.038	.009	.183
Item-12	.639	.120	.731	-.001	.263	.136	-.056
Item-11	.644	.093	.724	.032	.265	.190	-.058
Item-40	.672	.357	.071	.698	-.157	.162	-.028
Item-39	.729	.440	.080	.686	-.130	.201	.039
Item-38	.652	.384	-.001	.672	-.066	.133	.176
Item-23	.538	.157	.299	.627	-.092	.030	-.143
Item-28	.553	.109	.100	.605	.135	.290	-.252
Item-1	.740	.004	.089	-.026	.839	-.120	.110
Item-2	.724	-.037	.140	-.020	.805	-.049	.229
Item-4	.519	.012	.181	-.070	.685	-.063	.091
Item-19	.726	.183	.121	.142	-.095	.805	.015
Item-21	.709	.226	.093	.133	-.220	.763	.029
Item-20	.703	.079	.005	.390	.050	.719	-.157
Item-14	.638	-.017	.170	-.087	.085	.097	.765
Item-15	.598	-.122	.057	.083	.180	-.287	.676
Item-17	.572	-.066	.106	-.231	.335	.040	.624
Cronbach's Alpha		.904	.890	.823	.767	.786	.627

Note: % variance explained - rotated (64.429%); KMO sample adequacy measure (KMO = 0.865); Bartlett's test: Chi-square = 3190,537

DISCUSSION

After analyzing the data, it was verified that the constructed tool was considered valid among nursing workers in University Hospitals in relation to its capacity to achieve the purpose for which it was proposed. According to the results, the tool validation process, after exploratory factor analysis, indicated a structure of 29 questions in six factors.

In relation to the first factor formed, constituted by items 24, 25, 26, 32, 33, 34, 35, 36 and 37, the domain was formed "Physical and emotional exhaustion due to interpersonal relationships". The items of this construct grouped issues related to wear and tear on the mental and physical health of nursing workers, resulting from interpersonal conflicts.

There is evidence in the literature the strong capacity of the troubled relationship in triggering stress in workers⁽¹⁶⁾, especially in the onset of Burnout Syndrome⁽¹⁷⁾. Nursing workers are more likely to develop major depressive disorder by performing activities in precarious environments and with interpersonal conflicts⁽¹¹⁾.

The second factor, composed by the grouping of items 5, 6, 7, 8, 11 and 12, formed the domain "Behavior factors affecting interpersonal relationships", which portrays the presence of indifference behavior, aggressive tone of voice, absence of communication and dialogue, the presence of hierarchical relationships and gossip in the workplace as responsible for weakening interpersonal relationships.

In the context of Nursing work, relationships can be weakened, since these factors among members of the nursing team are conducive to triggering interpersonal conflicts and potentiate a climate of tension and discomfort in the work environment, inhibiting relationships, generating stress and undermining the performance of work⁽¹²⁾.

Concerning the third factor, organized by items 23, 28, 38, 39 and 40, the domain "Perception of emotional instability in relation to the difficulties of the relationship" was structured, which deals with workers' knowledge regarding their emotional state in the face of the difficulties of the relationship. In this sense, it is emphasized that the presence of feelings, such as anger, sadness, anguish, irritability, dissatisfaction are some feelings arising from interpersonal conflicts⁽¹⁸⁾. However, the presence of some signs of these may also be related to emotional exhaustion⁽¹⁹⁾. In the fourth factor, constituted by the grouping of items 1, 2, and 4, the domain "Affective constructions for strengthening interpersonal relationships at work" was created, emphasizing the importance of encouraging the establishment of friendly relations and friendship to make daily work more enjoyable.

Collaboration and harmony among peers arise over time, being positive factors in the work environment. Teamwork can be facilitated by behaviors of respect, warmth, willingness to accept the way of thinking, acting and feeling of others. In this way, fellowship and help among co-workers are positive ways that favor the development of a satisfactory job⁽²⁰⁾.

In the fifth factor, composed of items 19, 20 and 21, the domain "Self-perception of relational difficulties" was generated, represented by the difficulty of the workers to relate to the multiprofessional, nursing and management team. This fact is due to the non-establishment of interpersonal relations, which is due to difficulties or limitations inherent in the personality of the workers, in which the way of acting, speaking and expressing, fortuitously, can generate misinterpretation, causing conflicts among the team and the feeling of anguish and suffering⁽²¹⁾. A study⁽²²⁾ with nursing students showed that effective communication is related to the improvement of self-esteem, empathy and interpersonal relationship.

Finally, the sixth factor formed determined the domain "Management actions as a positive factor for interpersonal relations" composed of items 14, 15 and 17, in which there are actions that may favor the establishment of interpersonal relations. In this sense, the nurse worker as coordinator of the nursing team must know how to use strategies in the daily conflicts in their work environment, whether through dialogue, trainings or team meetings⁽¹²⁾. It is believed that meetings are spaces where you can share a sincere communication with highlights of essential points for professional appreciation and moment for discussions and solutions of problems⁽¹⁵⁾. Nursing managers are responsible for encouraging work processes based on positive, fair and respectful networks through transparent practices in the development of care⁽²³⁾.

Regarding the reliability of the tool, Cronbach's Alpha was used, which assesses how well a set of items measures unidimensionally the construct proposed by the tool. Values from $> .600$ are considered acceptable for exploratory studies, the Cronbach's Alpha value $> .700$ provides evidence of an internally consistent scale⁽⁹⁾. In the studied context, satisfactory indexes were verified, thus guaranteeing the reliability of the validated tool. It is also important to highlight the importance of the tool developed, since it can be used in other studies.

Cronbach's Alpha presented value .879; already the coefficients of the six constructs presented between .627 and .904. This result is in line with another study⁽²⁴⁾ of tool construction and validation that presents the internal coherence considered high, with Cronbach's Alpha coefficient value equal to 0.839, in Nursing. However, its novelty makes it difficult to compare the results with other studies in the same subject.

Study limitations

As a limitation of the study we highlight the achievement in a single professional and cultural context, that is, with nursing workers from a University Hospital in the South of Brazil. Therefore, it is suggested to extend the study to verify the influence of interpersonal relations among nursing workers in other contexts, such as philanthropic hospitals, Primary Health Care, among others.

Contributions for the sectors of Nursing, Health and Public Policy

The study presents contributions for the Nursing, Health or Public Policy, since the tool developed can contribute as a tool capable of identifying the factors that influence interpersonal relations at work of nursing and the consequences of these relations for health of the nursing worker.

CONCLUSION

The study allowed the construction and validation of a tool to identify the factors that influence interpersonal relationships and health of nursing workers, which was elaborated through available scientific literature, contributions of experts in the subject and Postgraduate students for assessment of its final version. The applied methodology used standards that allowed the results to provide evidence that the tool is valid and reliable, and can be applied in other work environments with nursing staff.

The results show the need for strategic actions, such as periodic meetings, leisure space and social interaction, and support of management as a way to minimize relational problems in the work environment, establishing harmonious relations among the team, seeking to avoid the triggering of physical and emotional exhaustion caused by conflicting relationships among workers.

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