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Determinants of Nurses' Caring Behaviors (DNCB): Preliminary Validation of a Scale

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ABSTRACT

Introduction: Nurses' Caring behaviors might be affected by many variables. The aim of this study was to develop and test a valid and reliable questionnaire to specify these determinants.

Methods: Both qualitative and quantitative methods were applied to develop the questionnaire. The development process of the instrument was conducted in three phases. The first phase consisted of four steps: in-depth interviews, development of the preliminary version of the 38- item DNCB, expert panel review, and language revision. The second phase involved examining 143 qualified nurses for psychometric properties of the DNCB. The participants were selected, based on quota sampling approach, from four educational hospitals affiliated to Urmia University of Medical Sciences, Iran. The final phase involved testing of the revised instrument using exploratory factor analysis.

Results: The results showed good CVI (0.89), test–retest correlation coefficient (0.91), internal consistency reliability (0.93), and acceptable face and construct validity. Results of the factor analysis revealed a 6-factor solution, determined by Eigen values greater than 1, accounted for 77.736 of the total variance.

Conclusion: This instrument is a simple scale with a good reliability and validity that can provide comprehensive information about the determinants of caring behaviors in a short time.

Introduction

Caring represents an essential human need and a fundamental component of the nursing profession.[1] Since defining of caring is difficult, due to its complex nature, some nursing researchers have tried to define "caring behaviors" instead of "caring". Caring behaviors are actions concerned with the well-being of a patient, such as sensitivity, comforting, attentive listening, honesty, and nonjudgmental acceptance.

Caring behaviors might be affected by the perceptions of nurses and patients. These participants might be also influenced by the contexts of culture, the patient's diagnosis, the type of institution, and the age of the nurse and the patient.[2] Corbin argues that caring behaviors might be ''at odds'' with the current conditions under which nurses work.[3] The effect of cultural differences in caring behaviors has been discussed by King and Crisp.[4] Karaoz emphasized the influence of nurses' experiences, self-respect, beliefs and workplace circumstances on their caring behaviors.[1]

Caring behaviors might also be influenced by the methods used for assigning nurses to different patients. Another factor that might affect the caring behaviors of nurses is the lack of time and support. Although it has been reported that nurses might care too much and get over-involved with their patients to the extent of visiting them on off days or buying them gifts[5], most researchers are in agreement with the contention of Enns and Gregory that lack of time and lack of

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caring support have significant effect on nurses' caring behaviors.[6]

Among the electronic sources, the only study that the authors have found on dealing directly with the determinants of caring behaviors is the one by Oskouie et al. who conducted a qualitative study in a burn center in Tehran, Iran.[7] They reported that personal characteristics of nurses such as conscience, religious beliefs, personal philosophy, sense of responsibility, and altruism might affect caring behaviors of the nurses. Nurses with these characteristics were found to be more patient, empathic, and cooperative. These nurses rarely tried to justify their faults by referring to their weakness, workload or staff shortage. Oskouie et al., furthermore, discussed that staff shortage, lack of organizational support, heavy workload, low payment, feeling pressure, lack of motivation, patients' characteristics and patients' age are among the factors that might influence nurses' caring behaviors.

Although nursing scholars are unanimous about the fact that caring behaviors might be affected by various factors, not many studies have been carried on to address the determinants of caring behaviors. Caring, although, was somewhat a neglected concept in Iran, newly there is a growing interest on investigating caring among Iranian nurse researchers.[8-10] These studies mainly were looking for the most important caring behaviors among nurses, but we need to know why nurses do some caring behaviors and why not do some others. In extensive internet search we could not find any reliable and valid instrument for extracting the determinants of caring behaviors. Even, the study conducted by Oskouie et al. was a qualitative study with no scale and statistical correlation analyses. As determinants of caring behaviors can be widely affected by environmental factors and vary from place to place, there is a need to have a valid and reliable scale for clarifying the determinants of caring behaviors in deferent settings. The aim of this study, therefore, was to develop a suitable instrument to determine the factors that influence the caring behaviors of nurses.

Materials and methods

This part includes sections on general methods, ethical considerations, phase descriptions, decision rules, and sample in each phase.

The process of developing the instrument had three phases, which together lasted eight months from August 2010 to April 2011. In the first phase, a new instrument was developed for the measurement of determinants of caring behaviors from nurses' perspective. The reliability and validity of the developed instrument was evaluated in the second phase. In the final phase, the revised instrument was tested using exploratory factor analysis.

Use of human subjects was reviewed and approved by the Research and Ethics Committee of Nursing school of Azad university of Tehran and Urmia University of Medical Sciences. Also, permission was obtained from the managers of the hospitals and their nursing administrators to conduct the study. Further, written consents were obtained from all those who participated in the study. All the questionnaires were anonymous and their confidentiality was assured.

The first phase consisted of four steps:

In step one; in-depth interviews were conducted with 11 nurses from general wards of four hospitals affiliated to Urmia University of Medical Sciences. These nurses were all female, qualified practicing nurses with more than five years of job experience. They also had an experience of in-service education related to caring. The interviewed nurses were asked to explain that which factors have effect their caring behaviors. After completing the eleventh interview, we convinced that no new data would be provided. The records were transcripted and two of researchers analyzed the data.

Analyzing was conducted in three steps using inductive approach: open coding, creating categories, and abstraction.[11] This was followed by developing 39 specific "determinants of caring codes" based on the findings of content analysis.

In step two, the content of the determinants of caring codes along with literature review was used as the basis for developing the preliminary version of the 39- item Determinants of Nurse Caring Behaviors (DNCB) questionnaire.

In step three, the DNCB was submitted to a panel of nine nursing experts including faculty members, clinical instructors, and nursing administrators to evaluate the clarity and relevance of the determinants on a five-point scale (1= strongly disagree, 2= disagree, 3= somewhat agree, 4= agree, 5= strongly agree). Five of these experts were faculty members who had more than five years of academic and clinical experience with some publications on the caring issue. Two of them were educational supervisor with more than five years of job experience and two of them were nurse managers with more than ten years of job experience in the field. The panel determined whether each item was appropriate, accurate, and representative. Based on the views of the expert panel, two items including "Behavior of instructors during school education" and "Views of instructors during school education" were merged, then the number of items was reduced to 38 at the end of this step (Table 1).

In step four, the language of the questionnaire was revised for clarity by five nurses. These nurses were all qualified with more than three years of job experience working in general wards. The questionnaire was then finalized accordingly.

A total of 143 nurses participated in phase II. These nurses were part of sample for entire study. The participants were selected based on quota sampling approach from four educational hospitals affiliated to Urmia University of Medical Sciences in West Azerbaijan Province of Iran. The criteria for selecting the participants were having Bachelors of Science (BS) certificate in nursing and more than six months of job experience in general wards of the hospitals. Results of the Kaiser-Meyer-Olkin (KMO) Measure of sampling adequacy (0.758) and Bartlett's Test of Sphericity (0.0001) revealed that the number of subjects was adequate to perform factor analysis. According to Brace et al., KMO value greater than 0.6 is acceptable.[12]

The nurses who satisfied the sample criteria were contacted, and the nature and purpose of the study were explained. Those who were willing to participate signed the consent forms. They were then given the questionnaires and asked to complete them. The completed questionnaires were collected later at the same shift.

The 38-item DNCB questionnaire was designed on a 5-point likert-type scale. In response to the question "How do you evaluate the effect of following items on caring behaviors of nurses?", the nurses had the choice of marking one of the following options: 1= is not effective totally, 2= is not effective, 3= is somewhat effective, 4= is effective, and 5= is completely effective. Approximately, 12 minutes was required to complete the questionnaire.

All statistical analyses were performed using SPSS ver. 13. Demographic data were summarized with frequencies and percentages. Mean (SD) were calculated for DNCB items. The internal consistency of the instrument was measured by Cronbach's α coefficients. The construct validity of the instrument was examined by exploratory factor analysis. All the results, with *p* value of less than 0.05, were considered significant.

Results

Phase I

This phase began with a 39-item preliminary instrument and ended with a 38-item scale. The content validity and face validity were verified by nine nursing experts, and the clarity was assured by five practicing nurses. For each item, the mean score that represented the evaluation of the panel was derived. In this evaluation, 8 items were given 5 points, 10 items 4 to 5 points, 19 items 3 to 4 points, and 1 item less than 2.5 points on the five-points likert type scale. The mean score of the items was 3.81, and the content validity index (CVI) was 0.89 Based on these findings, one item that fell below 2.50 was considered incoherent and unsuitable for revision so it was merged with another item discussed earlier in the step three of first phase. The revised version of the questionnaire, therefore, consisted of 38 items (Table 1). Also, the wording of a few items was changed to make it more easily understandable to the participating nurses.

Phase II

In this phase the 38-item DNCB was tested by a group of nurses in terms of the criteria described under 'setting and sample' section. The participants in this phase were 143 nurses from four educational hospitals. The majority of them were females (77.8%) aged 22 to 54 years (mean=32.09, SD= 7.80). Most of them (30.9%) had a job experience of more than 10 years and a majority of them (70.9%) were working in evening and night shifts (Table 2). Three items, with an item correlation of greater than 0.70, were deleted as redundant, based on the recommendation of Ferketich, thus leaving 35 items in this phase.[13] These items were marked with ([a]) in Table 1.

Table 3 gives the reliability data for the final 35-item instrument. After performing inter-item correlation coefficients, a mean of 0.319 was obtained, the minimum and maximum being 0.229 and 0.887 respectively, and the variance being 0.037. Corrected item to total correlations ranged from 0.4 to 0.669, which were considered to be satisfactory as they were above 0.30.[13] Cronbach's α was 0.93. Deletion of any item showed no improvement in α value. The DNCB, also, was re-administered 10 days after the first visit to 16 nurses to evaluate the instrument's test–retest reliability. These participants were excluded from the study sample. Test–retest correlation coefficients were high (Spearman correlation coefficients were 0.91).

Mean score of the 35 items on the DNCB was 3.975, which falls between "is somewhat effective" and "is effective". The highest mean score on any item was 4.56 on items 27 and 28, which refer to " interest in nursing profession" and " job satisfaction", followed by 4.48 on item 5, which refers to "sense of responsibility". The lowest mean score was 3.10 on item 36, which refers to "gender of patient", the next lowest being 3.14 on item 35 that refers to "age of patient".

Phase III

Based on the results of the factor analysis, a 6-factor solution determined by Eigen values greater than 1, accounted for 77.73 of the total variance (Table 4). The six subscales were named based on the common themes suggested by the items in each subscale.

Dimension 1: Workload, job satisfaction, and general interest in nursing profession

This dimension comprised of 6 items: One item on the impact of workload on caring behavior (factor loading 0.823), one item on job satisfaction (factor loading 0.850), and 4 items on interest in nursing profession (factor loading from 0.580 to 0.879).

Dimension 2: Characteristics of the nurse

This dimension consisted of 9 items including item 5, "sense of responsibility" (with highest loading factor of 0.833) and the age of the nurse (with lowest loading factor of 0.537).

Dimension 3: Circumstances of the work place
This subscale consisted of 7 items, including those asking questions about the quality of relationship with the managers (the highest loading factor of 0.87), satisfaction with the salary, demand of the patient or system for care, and the type of health setting e.g. governmental or private hospital (the lowest loading factor of 0.558).

Dimension 4: Patient characteristics
This subscale included 4 items such as age and gender of the patient (the highest factor loading of 0.823), his/her manner of dealing with the nurse, and diagnosis of the patient (the lowest loading factor of 0.71).

Dimension 5: Care definition, supervision, in-service education, and patient cooperation
This dimension consisted of 6 items including item 24, "lack of regulations that clearly describe the duties of nurses" (with lowest loading factor of 0.559), and "lack of participation by patients and their family in care planning'' (with highest loading factor of 0.71).

Dimension 6: Educational background of the nurse
This dimension consisted of 3 items asking questions about adequacy of education during nursing course including item 33,"inadequacy of clinical training" (the highest loading factor of 0.869) and ''behavior and views of instructors during school educations'' (loading factor of 0.646).

Table 1. Determinants of Nurse Caring Behaviors (38 –item DNCB)

df1	Personal characteristics of the nurse	**df 20**	Participation in educational course about 'caring' after graduation
df 2	Age of the nurse	**df 21**	Organized supervision on nursing care
df 3	Gender of the nurse [a]	**df 22**	Lack of participation of patients and their family in care planning
df 4	Believe in the need to deliver quality care	**df 23**	Changing the situation from educational to clinical
df 5	Sense of responsibility	**df 24**	Lack of regulations that clearly describe duties of nurses
df 6	Job experience	**df 25**	Lack of clear definition of care and caring
df 7	Individual problems of the nurse e.g. financial, physical, or psychosocial	**df 26**	Workload and lack of enough time
df 8	Level of stress and anxiety of the nurse	**df 27**	Interest in nursing profession
df 9	Family background and cultural context in which the nurse has been treated	**df 28**	Job satisfaction
df 10	Views of the nurse regarding patients' rights	**df 29**	Self-respect and respect to nursing profession
df 11	Religious believes of the nurse [a]	**df 30**	Lack of familiarity with facts in nursing profession
df 12	Time allocated to direct care	**df 31**	Lack of motivation to be involved in nursing care
df 13	Satisfaction with salary	**df 32**	Theoretical education during nursing course
df 14	Feeling of being a valuable employee in the system	**df 33**	Inadequacy of clinical training
df 15	The quality of relationship with the managers	**df 34**	Behavior and views of instructors during school education
df 16	Demand of the patient or system	**df 35**	Age of the patient
df 17	Type of health setting (governmental or private)	**df 36**	Gender of the patient
df 18	Sense of job security	**df 37**	The way the patients interact with nurses
df 19	Behaviors of colleagues and other nurses [a]	**df 38**	Medical Diagnosis of the patient

These three items were omitted from final version because of item correlation of greater than 0.70

Table 2. Background variables

variables	N (%)
Gender	
Female	112 (77.80)
Male	32 (22.20)
Age	
Less than 25	33 (23.60)
26 to 30	45 (32.10)
31 to 40	41 (29.30)
More than 41	21 (15.00)
Job Experience	
< 1 year	25 (18.00)
1 to 3 years	26 (18.70)
4 to 6 years	29 (20.90)
7 to 10 years	16 (11.50)
> 10 years	43 (30.90)
Shift	
Morning	35 (24.30)
Evening	7 (4.80)
Night	102 (70.80)

Table 3. Descriptive statistics and reliability analysis of the 35-item version of DNCB from phase II

DNCB items	Mean (SD)	Corrected item-total correlation	Cronbach's alpha if item deleted
df1	3.86 (0.903)	0.540	0.913
df2	3.64 (1.001)	0.654	0.911
df4	4.13 (0.809)	0.422	0.914
df5	4.16 (0.889)	0.400	0.914
df6	4.06 (0.959)	0.503	0.913
df7	3.96 (0.929)	0.601	0.912
df8	4.02 (0.877)	0.581	0.912
df9	3.80 (0.975)	0.653	0.911
df10	3.87 (0.951)	0.548	0.913
df12	3.95 (0.955)	0.531	0.913
df13	4.02 (0.980)	0.556	0.912
df14	3.91 (0.972)	0.570	0.912
df15	3.90 (0.980)	0.601	0.912
df16	3.87 (0.878)	0.622	0.912
df17	3.73 (1.129)	0.556	0.912
df18	4.06 (0.918)	0.542	0.913
df20	3.88 (0.817)	0.519	0.913
df21	4.05 (2.016)	0.455	0.924
df22	3.73 (0.923)	0.612	0.912
df23	3.68 (0.995)	0.553	0.912
df24	4.00 (0.820	0.523	0.913
df25	3.95 (0.825	0.593	0.912
df26	4.24 (0.827	0.566	0.913
df27	4.22 (0.855	0.519	0.913
df28	4.13 (0.941	0.519	0.913
df29	4.17 (0.837	0.575	0.913
df30	4.11 (0.776)	0.669	0.912
df31	4.14 (0.814)	0.543	0.913
df32	4.10 (0.849)	0.585	0.912
df33	4.15 (0.806)	0.583	0.913
df34	4.06 (0.853)	0.614	0.912
df35	3.66 (1.200)	0.442	0.914
df36	3.65 (1.248)	0.472	0.913
df37	3.97 (1.033)	0.546	0.912
df38	3.92 (1.089)	0.419	0.914

Table 4. Factor analysis of the 35-item version of DNCB, extraction principal components, varimax rotation with Kaiser Normalization

DNCB items	Dimension 1	Dimension 2	Dimension 3	Dimension 4	Dimension 5	Dimension 6
df1		0.551				
df2		0.537				
df4		0.641				
df5		0.833				
df6		0.832				
df7		0.799				
df8		0.792				
df9		0.648				
df10		0.616				
df12			0.686			
df13			0.719			
df14			0.827			
df15			0.870			
df16			0.744			
df17			0.558			
df18			0.670			
df20					0.565	
df21					0.681	
df22					0.710	
df23					0.763	
df24					0.559	
df25					0.578	
df26	0.823					
df27	0.879					
df28	0.850					
df29	0.873					
df30	0.745					
df31	0.580					
df32						0.648
df33						0.689
df34						0.646
df35				0.820		
df36				0.823		
df37				0.797		
df38				0.710		

Discussion

The purpose of this study was to develop a preliminary form of an instrument for evaluating the determinants of nurses' caring behaviors. As Paley argues, nursing studies make no attempt to study the link between "caring behaviors" and the rest of the World.[14] In this study, the authors developed an empirical instrument for enabling nurse researchers and managers to acquire a comprehensive knowledge about the determinants of caring behaviors. The instrument will help them in determining the

factors that really influence the caring behaviors of nurses and in providing feedback from the real end users.

Numerous studies were carried out on the caring behaviors of nurses and their perception of its importance. Most of them examined the patterns of nurses' caring behaviors; for example, they focused on the aspects of care-technical or psychological-which enjoyed more attention. Although a few studies examined the reasons for such behaviors, there is no valid and comprehensive instrument to extract or investigate the overall determinants of such behaviors. Most of the studies emphasized the impact of cultural differences on the caring behaviors of nurses. If a certain caring behavior is ignored in a specific cultural or health setting, the nurse managers or researchers might be interested in finding out the reasons for this ignorance.

The present instrument is a simple scale with a good reliability and validity that can provide comprehensive information about the determinants of caring behaviors in a short time. By applying it along with such tools as caring dimension inventory (CDI-25 items) or questionnaire of care (Q-Care), predictors of each caring behavior can be determined easily using the Regression test. Nursing administrators may use this instrument to promote and support caring in their clinical setting. By using this instrument, the managers would be spending less time, less energy, and less expenditure in improving the quality of care by directly modifying the predictor(s) or determinant(s) of that caring behavior.

Cross-cultural consideration

Although the terms and attributes used here are generally accepted worldwide, some terms and determinants may be specific to Iranian settings. For example, one item asked the effect of "Views of the nurse regarding patients' rights" on caring behaviors of nurses. Almost all the nurses in developed countries have a clear idea of human rights and patients' rights but it perhaps in most developing countries, the situation is different. Salimi et al., found that the majority of nurses and patients are aware of patients' rights, but either the process of implementing those rights was not satisfactory or they were altogether ignored in practice.[15] Therefore, it may not be necessary to include this item in the questionnaire of western countries, but the same maybe helpful in developing countries. Similarly, the item "demand of the system/or patient" is also considered as an important factor in Iran. For example, in developing countries, it does not matter whether a nurse listens to a patient or not, because in those countries there is no demand for this care either by the system or by the patients, whereas in the western countries this is an important caring behavior.[16]

Many studies were conducted on caring in western countries. It is therefore worthwhile to compare their findings with those of the present study to ascertain if there is congruence between eastern and western countries in the fields of caring behaviors and its determinants factors. The authors believe that determinants of caring behaviors are universal, but cultural diversity, organizational issues, rules and regulations, and laws may affect the universality of some items. Overall, this study supports Leninger's theory of universality and diversity based on culture.[17]

Study Limitations

The study has certain limitations. This instrument is only a preliminary form which might need to be tested on larger samples. The participants were from general wards and hence the suitability of the instrument to staff of other units will have to be tested too. The participants were surveyed only once, and no retesting for stability of the instrument was performed. Some questions may be relevant only to the setting and culture in Iran and may not be relevant to countries of other cultures. The DNCB was

validated in a Persian Language version, and its translated version in any other language would similarly require appropriate validation.

Future Research

The present analysis is preliminary, and future analysis of the present data set is mandatory to permit development of the DNCB as a valid tool for measuring the determinants of nurses' caring behaviors. Findings of this study provide a foundation and set the direction for future research in this area. Researches may even extend it to other settings with populations of different cultures. It is hoped that further exploration of this interesting and vital topic will enhance the extent of our understanding of the issue. Therefore, the authors invite other investigators to work on this instrument to identify its strengths and weaknesses.

Conclusion

This study used qualitative and quantitative methods to develop a questionnaire on "Determinants of Nurse Caring Behaviors". The content validity, face validity, construct validity, and reliability of the 35-item DNCB were ensured by expert review, factor analysis and internal consistency respectively. The instrument developed in this study addressed the six-dimensional construct of the determinants of nurse caring behaviors. It can be employed in medical-surgical wards to evaluate the determinants of nurse caring behaviors.

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Ethical issues

None to be declared.

Conflict of interest

The authors declare no conflict of interest in this study.

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