

Semantic differential scale for assessing perceptions of hospitalized patients about bathing*

Escala de diferencial semântico para avaliação da percepção de pacientes hospitalizados frente ao banho

Escala de diferencial semântico para la evaluación de la percepción de pacientes hospitalizados frente al baño

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ABSTRACT

Objective: To construct and validate a semantic differential scale to assess patients' perceptions in regarding bathing. **Methods:** The first stage consisted of constructing a scale, conforming to specific theoretical parameters, and the second stage consisted of factorial validation procedures and calculation of the measure of reliability coefficients. One hundred thirty patients admitted to the Intensive Care Unit participated in the validation study. **Results:** The resulting measure of semantic differential presented as a product of a two-dimensional scale with Cronbach's alpha reliability coefficients greater than 0.90. **Conclusion:** The scale can be considered a valid and reliable instrument for assessing patients' perceptions regarding showers and bed baths.

Keywords: Validation studies; Semantic differential; Perception; Baths; Inpatients; Intensive care units

RESUMO

Objetivo: Construir e validar uma escala de diferencial semântico que avalie a percepção dos pacientes em relação ao banho. **Métodos:** A primeira etapa, constou da construção da escala, conforme os patamares teóricos específicos e a segunda etapa, foi composta por procedimentos de validação fatorial e o cálculo dos coeficientes de confiabilidade da medida. Participaram do estudo de validação 130 pacientes internados em Unidade de Terapia Intensiva. **Resultados:** A medida de diferencial semântico resultante apresentou como produto uma escala bidimensional com coeficientes de confiabilidade alfa Cronbach superiores a 0,90. **Conclusão:** A escala pode ser considerada um instrumento válido e confiável para avaliação da percepção dos pacientes frente aos banhos de chuveiro e no leito.

Descritores: Estudos de validação; Diferencial semântico; Percepção; Banhos; Pacientes internados; Unidades de terapia intensiva

RESUMEN

Objetivo: Construir y validar una escala de diferencial semántico que evalúe la percepción de los pacientes en relación al baño. **Métodos:** La primera etapa, constó de la construcción de la escala, conforme los niveles teóricos específicos y la segunda etapa, estuvo compuesta por procedimientos de validación factorial y el cálculo de los coeficientes de confiabilidad de la medida. En el estudio de validación participaron 130 pacientes internados en una Unidad de Cuidados Intensivos. **Resultados:** La medida del diferencial semántico resultante presentó como producto una escala bidimensional con coeficientes de confiabilidad alfa Cronbach superiores a 0,90. **Conclusión:** La escala puede ser considerada un instrumento válido y confiable para la evaluación de la percepción de los pacientes frente a los baños de ducha y en la cama.

Descriptores: Estudios de validación; Diferencial semántico; Percepción; Baños; Pacientes internos; Unidades de terapia intensiva

* Study conducted in the Heart Institute, Hospital das Clínicas, University of São Paulo – USP – São Paulo (SP), Brazil. It is extracted from the Masters thesis "Shower and bed bath: comparison of perception and the level of anxiety in patients with acute myocardial infarction" presented at the Federal University of São Paulo - UNIFESP – São Paulo (SP), Brazil.

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INTRODUCTION

Hospitalization may cause a series of changes in patients' lifestyle and one of the habits that usually changes is body hygiene, which is replaced by a bed bath⁽¹⁾. Bathing contributes to the recovery of hospitalized patients, improving their health and quality of life. However, even though people consider it one of the most important needs, health professionals do not give it its proper importance.

A concern to comply with standards and routines is currently observed to ultimately lead to fragmented care in daily nursing routines, centered on the performance of a single task⁽²⁾. Health professionals frequently forget that when they give a bath to a patient they are manipulating the body of another person, invading his/her privacy and intimacy, causing dissatisfaction and anxiety⁽³⁻⁴⁾.

It is the role of nurses when in such a situation to observe and identify the perceptions of patients seeking to help him/her adapt to his/her environment and alleviate suffering. Few studies address the perception of patients concerning bed baths and most are qualitative. Hence, there is a need to develop a reliable instrument to identify the perceptions of patients concerning baths.

The development of scales to evaluate the perception of patients concerning actions performed by nursing professionals can support and guide nurses' actions, ensuring a more humanized care. Additionally, it provides clear and reliable knowledge on subjective—both positive and negative—determinants of patient wellbeing.

OBJECTIVE

To construct and validate a semantic differential scale to evaluate the perception of patients concerning baths.

METHODS

The method on which this study was based was the Semantic Differential Method (SD). The SD is one of the techniques frequently used to evaluate the affective perception of people concerning objective and subjective situations faced in their daily lives. It was created by Osgood, Suci and Tannenbaum when they perceived the need to evaluate the affectivity and qualities of a concept and ways to quantify the affective meaning of attitudes, opinions, perceptions, social image, personality, preferences, and interests of people and/or patients concerning content related to their health, treatment and disease, which are not directly measurable⁽⁵⁾.

The steps involved in this method include the definition of concepts to be evaluated; the description, through adjectives, of the properties of the evaluated concept; the evaluation by the respondents of some specific concept within a set of semantic scales. The concept to be evaluated can be expressed by a word,

phrase, or figure and has a variable psychological meaning according to the group evaluating it⁽⁵⁾.

Semantic scales usually consist of seven or five points and have at each pole opposite adjectives, through which the subjects evaluate the concept, checking the one that most closely express their feelings. One extremity is considered 'positive' and the other 'negative', for instance, good and bad.

The concept to be evaluated is presented at the top of a sheet and below it the scales for evaluation and classification by the subjects, as shown on the following example.

Good ____:____:____:____:____:____:____ Bad

Each interval represents a certain magnitude, implicitly or explicitly expressed by quantifiers (which express the degree of answer-meaning) while the central quantifier is the origin and neutral point. The intervals receive a numerical value such as -3, -2, -1, 0, +1, +2, +3 or 1, 2, 3, 4, 5, 6, 7⁽⁶⁾.

The adjectives are chosen according to how they best fit into the study's problem. Hence, there are no standards; the scales and concepts used in a given study depend on the purpose of each study⁽⁶⁾. The semantic differential scale has been used in fields in the social and human sciences, though seldom used in studies in the health field⁽⁷⁻¹²⁾.

Procedures used in the construction and characteristics of measurements

The study was performed at the Heart Institute and divided into two phases. The first involves the development of the semantic differential scale and the second involves procedures of validation and precision.

Construction of the semantic differential scale

Five of the six steps described by Pereira⁽⁵⁾ for the construction of bipolar scales were used, though some changes relevant for this study were considered. The first stage described by Pereira refers to the identification of concepts through the translation of the standard-list as set out by Osgood⁽⁵⁾. However, since the concepts analyzed in this study were already defined, 'bed bath' and 'shower bath', this step was not performed and was considered to be complete. Hence, the study's stages followed this order:

- the first stage included the qualitative descriptors (adjectives) for the analyzed concepts. A total of 25 patients, both genders, participated in this stage according to the following inclusion criteria: patients hospitalized in an Intensive Care Unit (ICU) who received at least once a bed bath and a shower bath and were Brazilians. The patients added three adjectives in each of the following phrases: "A bed bath is _____" and "A shower bath is _____".

- the second stage included analysis and the elimination of adjectives that had the same meaning within the scales. A semantic and linguistic expert performed this analysis.

- the third stage consisted of obtaining antonyms for the selected adjectives. For that, an instrument was developed so that five experts in the Portuguese language

and 15 nurses identified the respective opposite adjectives. The experts in Portuguese were teachers in the field with at least five years of experience and nurses had at least two years of experience in the field. Both written and oral instructions were provided to avoid difficult, ambiguous and little known antonyms. The experts were asked to identify as antonyms simple and familiar words easily comprehended. Antonyms that reached more than 80% of agreement among experts and nurses were included.

- the fourth stage was related to the face validation procedure and included a detailed analysis of each of the pairs of apposite adjectives by a semantic and linguistic professor to avoid inadequate, questionable, meaningless, redundant or similar scales given the characteristics inherent to the concept to be evaluated.

- after the fourth stage was carried out, we deemed it important to include a new stage (fifth stage) not described by Pereira, that of identifying adjectives as being positive or negative when analyzing baths. To perform this phase, 40 ICU inpatients judged each adjective and their respective antonyms and identified them as positive or negative, when evaluating bed and shower baths.

- based on the definition of positive and negative poles, the SD scale was created. Aiming to avoid any type of bias, Pereira⁽⁵⁾ suggests a sixth stage in which adjectives are randomized in two ways: in relation to the order the adjectives are presented and in relation to their polarity to avoid the possibility that positive or negative poles might always be directed to the same side of the total set. Therefore, the position of each adjective in the scale, both in relation to their sequence and direction (left or right), was established by a draw.

Validation of the semantic differential scale

The scale was submitted to procedures of factorial and discriminant validation, and the limits of precision and reliability of the instrument were also established. The procedure of factorial validation corresponds to a set of statistical techniques whose objectives direct an explanation concerning the correlation or covariance in a set of observed variables. The elements of precision and reliability in turn are related to aspects of the reliability of the score generated by the measurement instrument. Such a property is usually computed using Cronbach's coefficient and the values of reference for a good scale are above 0.70⁽¹³⁾.

With this objective in mind, the scale was applied to 130 ICU inpatients considering two events (bed bath and shower bath). The inclusion criteria were: being ICU inpatients; having received a bath in bed and in a shower at least once; being Brazilian; with no visual or cognitive impairment (reduced level of consciousness, confusion); being literate; and expressing agreement to participate in the study through signing free and informed consent forms.

Because this study addresses the development of investigation tools, the study's sample is a convenience

sample to which the researchers have access. Therefore, we followed Pasquali's⁽¹³⁻¹⁴⁾ recommendation and complied with the criterion of a sample with more than 100 individuals to perform procedures of factorial analysis and reliability computation.

Analysis of data and ethical aspects

Data concerning this phase of the study were analyzed through the Statistical Package for the Social Sciences (SPSS) version 13.0. Initially, descriptive statistics were computed for all the items on the scale. Afterwards, the scale's dimensional structure was verified through exploratory factorial analysis, and the computation of the reliability indexes was performed through Cronbach's alpha for the items of the resulting subscales as well as the index of the correlation among factors. The study's project was approved by the Research Ethics Committee at the Federal University of São Paulo at the Heart Institution.

RESULTS

In relation to the first phase of the scale construction (identification of adjectives), the sample was composed of 25 ICU inpatients: 14 (56%) were men and 11 (44%) were women. In relation to the identification of apposite adjectives, the sample was composed of five experts in Portuguese, all teachers, aged between 31 and 41 years old (average of 36.8 years old) with experience between seven and 17 years (average of 11.2 years) and 15 nurses aged between 25 and 39 years old (average of 30.9 years old) with experience between two and 15 years (average of 7.1).

A sample composed of 40 ICU inpatients identified the adjectives as being either positive or negative. The patients were aged between 42 and 69 years old (average of 67.8 years), 21 (53%) were men and 19 (47%) were female.

The sample focused on the validation procedures was composed of 130 patients: 72 (55.38%) were women and 58 (44.62%) were men. Their age ranged from 49 to 69 years old (average 57.7 years old).

Construction and validation of the semantic differential scale

The scale was developed according to the six steps previously described. In the first stage, 36 adjectives related to 'bed bath' and 'shower bath' were identified: good, tiresome, comfortable, slow, necessary, uncomfortable, hygienic, difficulty, great, essential, warm, disturbing, embarrassing, insufficient, clean, motivating, easy, sufficient, wet, satisfactory, tepid, pleasant, fast, encouraging, refreshing, complete, bad, efficient, dry, independent, unpleasant, humiliating, excellent, lousy, cold and relaxing.

The semantic and linguistic expert excluded six adjectives in the second stage because they had the same meaning as other adjectives within the scales: excellent, essential, lousy, humiliating, great and tepid. The third

stage referred to the identification of antonyms of the 30 adjectives identified in the second stage. Only those that obtained 80% of agreement among the experts were included. The adjective 'refreshing' was excluded because there was no agreement concerning its antonym. Another adjective upon which no agreement was reached was 'embarrassing' though the researchers thought that this would be an essential adjective to evaluate the perception of 'bath' and for this reason, it remained and the term 'non embarrassing' was used as its antonym.

The fourth stage included the analysis of each of the 21 pairs of opposite adjectives to avoid inappropriate, inexpressive, similar or redundant scales. No scale was eliminated after the qualitative analysis of the opposite adjectives.

The following stage consisted of verifying whether the adjective was positive or negative and all adjectives had more than 80% of agreement. The adjectives considered positive were: good, warm, pleasant, clean, hygienic, satisfying, easy, complete, sufficient, comfortable, necessary, fast, relaxing, efficient, encouraging, independent, motivating, wet, accommodating, non embarrassing and restful. The negative adjectives included: unpleasant, bad, embarrassing, tiresome, inaccommodating, dry, slow, uncomfortable, difficulty, cold, insufficient, demotivating, inefficient, dependent, discouraging, stressful, anti-hygienic, incomplete, unnecessary, unsatisfying, and dirty.

After the scale was developed with proper adjustments in relation to its face and content validity, the elements concerning factorial and construct validity were verified.

Analysis of the main components was then initiated to verify the adequacy of the sample to the factorial analysis according to Kaiser-Meyer-Olkin (KMO) test and Bartlett's sphericity test. The first tests the variables' partial correlations, which should have indexes equal or greater than 0.6, demonstrating the viability of data to the factorial analysis procedure. The second proves the hypothesis that the matrix of covariance is one of identity. In this study's sample, the KMO obtained a value of 0.92 and Bartlett's sphericity test was significant at 0.0001%.

To determine the number of factors to be extracted, we opted for the method of parallel analysis. Data in Table 1 present empirical and random eigenvalues. We verified that up to Factor 2, empirical eigenvalues are greater than the random ones. From the Component 3 on, the empirical values are below the random value, indicating a solution of two factors.

Table 1 – Empirical and random eigenvalues of the first two components through parallel analysis

Eigenvalues	Components							
	1	2	3	4	5	6	7	8
Empirical	9.96	1.62	1.35	1.04	0.92	0.82	0.78	0.62
Random	1.54	1.44	1.37	1.30	1.25	1.20	1.15	1.10

After establishing a bi-factorial structure, the factorial analysis method of principal axis factoring was used to extract the factors. Promax rotation was chosen because it is oblique and allows correlation between the factors⁽¹⁰⁾. A minimum factorial saturation of 0.4 to accept the item was established to ensure that each item represented the construct underlying the factor. Of the pairs of final adjectives, three (slow/fast, warm/cold, wet/dry) were excluded because they obtained a factorial load below 0.4.

Data from Table 2 present the distribution of 18 final pairs of adjectives in the respective factors, with values related to the variance explained by factor, Cronbach's alpha coefficient of reliability, communality and number of items per factor.

Table 2 – Factorial matrix – Promax rotation of the pairs of adjectives.

Items	F 1	F 2	H ²
Relaxing/stressful	0.98		0.80
Satisfying/unsatisfying	0.96		0.79
Inefficient/efficient	0.86		0.71
Encouraging/discouraging	0.80		0.71
Good/bad	0.76		0.69
Restful/tiresome	0.71		0.64
Hygienic/anti-hygienic	0.68		0.61
Unnecessary/necessary	0.61		0.50
Easy/difficulty	0.49		0.49
Insufficient/sufficient	0.43		0.65
Comfortable/uncomfortable		0.92	0.80
Embarrassing/non embarrassing		0.81	0.66
Inaccommodating/accommodating		0.73	0.72
Pleasant/unpleasant		0.72	0.74
Dirt/clean		0.56	0.67
Motivating/demotivating		0.49	0.70
Incomplete/complete		0.48	0.61
Independent/dependent		0.46	0.50
Total items	10	8	
Reliability coefficient	9.20	9.00	
Variance explained by factor	47.50	7.70	

The results reveal the measure's internally consistent structure. The final 18 items loaded on two well-defined factors. The first factor received the name 'Acceptance' because it covers items that access aspects concerning the patient accepting a bath, how pleasant and how satisfactory it is, and elements concerning perceptions of hygiene. The second factor was called 'Evaluation' because it refers to the perception concerning the quality of the bath as well as motivation to bath, aspects related to embarrassment and dependence on others.

The reliability coefficients of the two factors were all high, favoring the hypothesis that the measure was precise and internally consistent. These aspects indicate the viability of using the instrument for future studies on subjective aspects concerning the perception of baths.

DISCUSSION

The adjectives identified in this study have been frequently reported in qualitative studies addressing the perception of patients concerning baths: unpleasant⁽¹⁵⁾, embarrassing^(1,15-20), essential⁽¹⁵⁾, difficulty^(15,20), uncomfortable^(15,20), does not clean⁽¹⁵⁾, dry⁽¹⁵⁾, cold⁽²⁰⁾, incomplete⁽¹⁵⁾, not humane⁽¹⁵⁾, slow⁽¹⁵⁾, dissatisfactory⁽¹⁵⁾, and dependent⁽²⁰⁾, aspects that corroborate the content and face validity. There are, in addition to indicators of the understanding of items, reports of associations with other forms of the description of the phenomenon 'bath'.

The initial scale was composed of 21 pairs of adjectives and, after the analysis of the main components, was submitted to promax rotation. Only three (slow/fast, warm/cold, and dry/wet) were excluded because they obtained a factorial load below 0.4. Therefore, the final version was composed of two factors (Acceptance and Evaluation), resulting in a total of 18 pairs of adjectives, evaluated using a semantic scale of seven points.

After complying with all the methodological steps suggested by the study base on semantic differential⁽⁶⁾, the scale can be considered validated and reliable both from an applied point of view, which enables a numerical differentiation in terms of the degree of pleasantness and other affective aspects between a shower bath and a bed bath, and also from a statistical point of view, presenting consistent results in psychometric terms, reaching the inherent requirements according to the

theory of measuring subjective phenomena (psychometrics).

The creation of a semantic differential scale enables the evaluation of the perception of patients in relation to baths and can be used for cardiac patients hospitalized in ICUs.

The quantitative identification of perceptions in relation to a given nursing procedure enables the understanding of determinants of patient comfort and consequently guides nursing actions, thus improving the quality of care delivery.

Study's limitations

The limitation of this study is the population sample. The construction and validation of a semantic differential scale was performed with cardiac patients hospitalized in an ICU. For the results to be replicable in other populations, further validation studies addressing patients with other conditions, both clinical and surgical, are needed.

CONCLUSION

The study resulted in a validated scale that evaluates the perception of patients concerning shower baths and bed baths. Obtaining a validated scale is extremely important and relevant for nursing professionals because it enables evaluating and modifying negative aspects of bathing, directing nursing guidance and improving the quality of care delivery.

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