

# The Patient Satisfaction Scale: Validation of a Portuguese Version in Women Receiving Obstetric Care

Maria Margarida Santana Fialho Sim-Sim<sup>1</sup>, Maria João Pimenta Marques<sup>2</sup> and Claudia Alexandra Canaverde Saruga<sup>2</sup>

1. Escola Superior de Enfermagem, Universidade de Évora, Évora 7000-811, Portugal

2. Serviço de Obstetrícia, Hospital do Espirito Santo, Évora 7000-811, Portugal

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**Abstract:** Satisfaction of the obstetric patient is an indicator taken in account in health reports. Previous studies point towards several dimensions. In order to better evaluate health care services, it is curtail to have Portuguese language tools of easy appliance. The aim of the study is to validate the PSS in Portuguese. This is a descriptive study using a convenience sample of ninety one mothers. Participants were primary healthcare clients with children aged of 1 or less. The analysis regarded sensitivity, reliability, as well as concurrent, discriminant, converging and factorial validity. After Promax rotation, three factors were extracted explaining 82.13% of the variance. Reliability analysis was observed by split-half method showing a Spearman-Brown correlation coefficient of 0.91. Cronbach's alpha of the Portuguese PSS total scale and subscales were satisfactory with coefficients between 0.829 and 0.941. Concurrent validity was supported by a continuous variable of support from nurses. Discriminant validity showed in women with a normal vaginal delivery, a higher satisfaction both globally and on the three dimensions. The properties observed at the PSS have shown to be satisfactory. PSS reveals itself as a valid measure of the obstetric client's satisfaction.

Key words: Nursing, obstetric care, patient satisfaction, instrument development, measurement, psychometrics.

# 1. Introduction

Consumer satisfaction is highly significant when evaluating health care processes. Satisfaction is important to health care organizations and is often a quality goal in mission statements. Satisfaction surveys enable patients to provide feedback on the quality of the care they receive and how they received it. This helps organizations to determine whether they provide adequate resources and well-organized care. Satisfaction has repercussions on reputation and accreditation [1-3].

Research on client satisfaction was initiated during the 1970s in order to assess the patient's subjective evaluation of the cognitive/emotional response that results from the interaction of the patient's expectations of nursing care and their perception of the actual nurse behaviors/characteristics [4]. Patient satisfaction is a significant indicator of quality of care. It tells nursing staff what is important from the patient's perspective [5]. In the obstetric context, meaningful childbirth experience happen when nurses provide supportive care to mothers and clients' satisfaction with care is high [6-7].

Obstetric client satisfaction has been studied using scales such as the Newcastle Satisfaction with Nursing Scale [2-8], Consumer Quality Index [7], or CONFORTS [9]. These studies highlight how the information received was correlated, whether or not the care was provided by staff with good interpersonal skills, the support that the patient received while they were in hospital, the level of trust they [10] had in the nursing skills, whether or not the care received made the patient feel calm and tranquil, and whether or not the staff anticipated what the mothers required.

**Corresponding author:** Maria Margarida Santana Fialho Sim-Sim, Ph.D., professor, research field: maternal health. E-mail: msimsim@uevora.pt.

These instruments are useful as audit tools that for monitoring effectiveness and quality of care [11]. Given the importance of women's satisfaction with all aspects of childbirth, there is a need to validate instruments to measure satisfaction in different languages [3]. The Patient Satisfaction Scale (PSS) has been shown to be a robust instrument in several care units in different countries [10]. Prior to the intervention described in this study, no version of this scale was available in the Portuguese language. That is why the aim of this study was to validate the PSS [12] for use in Portuguese-speaking obstetric patients.

The aim of this study was to test psychometric properties of the Portuguese language version of the PSS in women experiencing childbirth. As the Portuguese version of the instrument has not previously been standardized for an obstetric client population, and since women experiencing childbirth are undergoing a life transition, not a state of illness, the authors felt it was important to test concurrent and discriminant validity of the instrument for a group of women who had given birth within the last 12 weeks.

# 2. Materials and Methods

This was an instrument validation study, using a cross-sectional survey.

The author made the following a priori predictions:

• Since breastfeeding is usually a problematic aspect of motherhood [13-15], we predicted that there would be a positive correlation between global satisfaction and the support provided by nurses to breastfeeding mothers, demonstrating concurrent validity.

• Because delivery is a physiological mechanism [13, 14], the authors predicted that women who had normal vaginal deliveries would record higher levels of satisfaction than women who had instrument assisted vaginal deliveries or a caesarean section, demonstrating discriminant validity.

# 2.1 Participants

The data used in this study were collected in a

healthcare center, in Portugal, where mothers were taking their babies to be vaccinated. The authors use a convenience sample, cognizant that the authors' sample may not be truly representative, and may serve as a pilot study which may need to be replicated using more representative sampling methods, if reliability is to be demonstrated. The author defined the following inclusion criteria: 1) Portuguese speakers, 2) Mother aged 18 or over and 3) Women with children up to 12 weeks old. Nine of the 100 questionnaires were disregarded because of incomplete answers. This meant that the author's research was based on data collected from 91 participants.

## 2.2 Instruments

The PSS is a self-report instrument, which consists of a Likert-type rating scale comprising four possible answers (e.g., 1 = "not at all satisfied" to 4 ="completely satisfied"). It includes three subscales: 1) Technical-scientific care needs (three items on nurses' technical skills), 2) Information acre-needs (four items, such as "the way nurses prepared me and my family for the hospital discharge") and 3) Interaction/Support care needs (three items on the quality of care the nurses provided). All items are positively formulated. Final scores are obtained from mean values, with higher scores reflecting higher levels of satisfaction.

Previous studies showed good results regarding the reliability of this instrument, with Cronbach's coefficient alpha between 0.79 and 0.89 [12] or 0.86 and 0.95 [16] in the Finnish version, and between 0.94 and 0.96 in the versions from six different European countries: Cyprus, Czech Republic, Greece, Finland, Hungary and Italy [10].

The questionnaire included socio-demographic data, obstetric history data and a question about how the mothers perceived the support provided by the nurse while breastfeeding, which scores range from 0 to 100.

The first translation of the PSS into Portuguese was performed by an obstetric nurse who is fluent in English once she lived and worked at USA. After translation, a group of two bilingual Portuguese-English language teachers discussed the difficulties with the researchers, and worked together to achieve a modified, integrated version. It was tested out on 10 women before the study commenced. No evidence was found that further changes were needed at that stage.

# 2.3 Data Collection

Women were invited to take part in the study after they received nursing care. They were told that participation was optional. The aim of the study was explained to the women in the healthcare center they visited. This information was reinforced by the front page of the questionnaire.

## 2.4 Ethical Considerations

The study was approved by the Health Care Center's Clinical Director, who ensures that the ethical principles for research involving human participants are safeguarded [17]. Permission was obtained via e-mail from the original authors of the scale [12].

## 2.5 Data Analysis

Data were analyzed using SPSS<sup>®</sup> version 20 software package. Descriptive statistics were used to characterize the variables measured. Exploratory factor analysis, criterion and discriminant validity, with non-parametric tests, were used to study validity. Cronbach's alpha and split-half methods to test for reliability were performed.

# 3. Results and Analysis

Participants were aged between 18 and 40 years and the mean age was 30.1 years (SD = 4.6). Most of the women were educated to high school level (n = 40; 44%), or had completed 12th grade schooling (n = 30; 33%). Their professions (Table 1) were recorded using the categories laid down by the Portuguese National Statistical Institute [18] (INE 2010).

Of the 90 women who identified the delivery method, 35 (38.9%) gave birth by normal vaginal delivery and

Table 1 Professional categories.

| Categories   | n  | %    |
|--|----|------|
| Specialists of intellectual and scientific professions | 33 | 36.3 |
| Administrative personnel and similar workers           | 13 | 14.3 |
| Labourers, craftsmen and similar workers               | 25 | 27.5 |
| Unskilled workers                                      | 7  | 7.7  |
| Unemployed   | 12 | 13.2 |
| Not answered   | 1  | 1.1  |
| Total  | 91 | 100  |

55 (61.1%) had an instrument delivery 18 (20%) by forceps or ventouse method and 37 (41.1%) by caesarean section.

# 3.1 Principal Component Analysis

The exploratory factor analysis Kaiser-Mayer-Olkin measure and Bartlett's chi square tests were checked. Adequacy of the sample were confirmed by the Kaiser-Mayer-Olkin score of 0.882, and Bartlett's chi squared of 767.25 (P < 0.001). To examine the empirical validity structure of the PSS, some factor solutions were computed. First we explored principal component analysis (PCA) that supported a one-factor solution with a uni-dimensional structure. Then the authors computed a PCA with Varimax rotation in an attempt to replicate three factors, but the rotated solution was difficult to interpret, with а co-representation of items 3 and 9 in all the three factors, and also a co-representation of items 4, 6, 7, 8 and 10 in two factors. The loadings in the Varimax rotated solution ranged from 0.31 to 0.87 (Table 2).

 Table 2
 Varimax rotated component matrix.

| Items | Component |       |       |
|-------|-----------|-------|-------|
|       | 1         | 2     | 3     |
| E5    | 0.873     |       |       |
| E4    | 0.811     |       | 0.364 |
| E7    | 0.806     | 0.313 |       |
| E6    | 0.789     | 0.435 |       |
| E3    | 0.674     | 0.378 | 0.440 |
| E9    | 0.339     | 0.813 | 0.300 |
| E10   | 0.464     | 0.724 |       |
| E8    |           | 0.697 | 0.510 |
| E2    |           |       | 0.838 |
| E1    |           |       | 0.830 |

Extraction method: Principal Component Analysis. Rotation method: Varimax with Kaiser Normalization. a. Rotation converged in 6 iterations. Then, given the moderate to high Spearman Rho inter-item correlation (r between 0.43 and 0.87), the Promax rotation was selected [19] for further analysis. Commonalities ranged from 0.76 to 0.87 and the solution accounted for 82.13% of the variance. The first of the three rotational factors explained 65.4% of the total variability, while the second and third factors were responsible for a close variance of 9.98% and 6.74%, respectively. The loadings in the Promax rotated solution ranged from 0.35 to 0.98 (Table 3).

The items were evaluated based on coefficients larger than 0.30. When it came to the analysis of the pattern matrix, item 3 showed a different distribution from the one proposed by the original study. The first factor (item 3, 4, 5, 6, 7) which called "Information availability care-needs", once the inclusion of item 3 gives an enlargement of the subscale concept. For the second factor (item 8, 9, 10) the original denomination was kept, "Interaction support care-needs", the same happens in the third factor, "Technical-scientific

 Table 3
 Factor Structure with Promax Rotation.

care-needs", now with two items (item 1 and 2).

## 3.2 Reliability Analysis

As it would not be possible to do a retest, the option of a split-halves method was chosen. The split-half reliability measure showed an  $\alpha$  value of 0.89 for the odd items group and 0.89 for the second group. The Pearson's correlation between these two forms was high (r = 0.84), with a Spearman-Brown correlation coefficient of 0.91.

Internal consistency was observed. The inter-item correlation was between 0.43 and 0.87. The item-total correlation was between 0.62 and 0.85. The total scale showed a Cronbach's  $\alpha$  of 0.94, which was not altered by removing some of the items. The subscale information availability care-needs Cronbach's alpha was 0.90. The second scale Interaction support care-needs Cronbach's alpha is 0.86 (Table 2). For the third subscale Technical-scientific care-needs, Cronbach's alpha is 0.81.

|  |             |        | Component |        |
|--|-------------|--------|-----------|--------|
|  | Communality | 1      | 2         | 3      |
| Information availability care-needs<br>5.A forma com que as enfermeiras me explicavam as coisas  | 0.883       | 0.987  | -0.130    |        |
| (With the ways nurses explained things to me)<br>7. A forma como as enfermeiras me prepararam e à minha família para a alta do hospital  |             | 0.872  |           |        |
| <ul><li>(With the ways nurses prepared me and my family for my discharge)</li><li>4. O tipo de informação que as enfermeiras me davam durante o internamento</li></ul>   | 0.851       | 0.866  |           | 0.167  |
| (With the kinds of information nurses gave me during the hospitalization)<br>6. A forma com que as enfermeiras me prepararam para os dias de estadia no hospital   | 0.828       | 0.810  | 0.261     | -0.174 |
| <ul><li>(With the ways nurses prepared me for my stay at the hospital)</li><li>3. O tempo que as enfermeiras despendiam comigo</li></ul>   | 0.791       | 0.608  | 0.144     | 0.254  |
| (With the amount of time nurses spent with me)   |             |        |           |        |
| <b>Interaction support care-needs</b><br>9. A quantidade de cuidados de enfermagem que recebi  | 0.866       |        | 0.909     |        |
| (With the amount of nursing care I received)   |             |        |           |        |
| <ul><li>10. As possibilidades que tive para obter cuidados especializados quando necessitei<br/>(With the choices I had in getting specialized nursing care when I needed it)</li><li>8. A qualidade dos cuidados de enfermagem que recebi</li></ul> | 0.763       | 0.247  | 0.779     | -0.158 |
| (With the overall quality of nursing care I received)  | 0.797       | -0.141 | 0.736     | -0.353 |
| <b>Technical-scientific care-needs</b><br>1. A competência global das enfermeiras  |             |        |           | 0.893  |
| <ul><li>(With the nurses' overall competency)</li><li>2. A forma como as enfermeiras me abordavam e me tratavam</li></ul>  | 0.853       |        |           | 0.876  |
| (With the ways nurses approached me and treated me)  |             |        |           |        |

a. Rotation converged in 6 iterations.

| Item                                | n  | Mean (SD)   | Range | 95% CI    | Skewness | Cronbach<br>alpha | Corrected<br>item-total<br>correlation | Scale alfa if item deleted |
|-------------------------------------|----|-------------|-------|-----------|----------|-------------------|--|----------------------------|
| Technical-scientific care-needs     | 91 | 3.09 (0.49) |       |           |          | 0.81              |  |                            |
| Item 1                              | 91 | 3.16 (0.48) | 2-4   | 3.07-3.26 | 1.83     |                   | 0.62                                   | 0.94                       |
| Item 2                              | 91 | 3.02 (0.59) | 1-4   | 2.90-3.15 | -1.29    |                   | 0.68                                   | 0.94                       |
| Information availability care-needs | 91 | 2.89 (0.62) |       |           |          | 0.90              |  |                            |
| Item 3                              | 91 | 2.95 (0.67) | 1-4   | 2.80-3.09 | -1.51    |                   | 0.85                                   | 0.93                       |
| Item 4                              | 91 | 2.91 (0.71) | 1-4   | 2.76-3.06 | -2.51    |                   | 0.84                                   | 0.93                       |
| Item 5                              | 91 | 2.81 (0.74) | 1-4   | 2.66-2.97 | -2.67    |                   | 0.81                                   | 0.93                       |
| Item 6                              | 91 | 2.88 (0.64) | 1-4   | 2.74-3.01 | -2.52    |                   | 0.80                                   | 0.93                       |
| Item 7                              | 91 | 2.90 (0.65) | 1-4   | 2.77-3.04 | -2.54    |                   | 0.77                                   | 0.93                       |
| Interaction support care-needs      | 91 | 2.98 (0.58) |       |           |          | 0.86              |  |                            |
| Item 8                              | 91 | 3.05 (0.66) | 1-4   | 2.92-3.19 | -3.09    |                   | 0.71                                   | 0.94                       |
| Item 9                              | 91 | 2.99 (0.62) | 1-4   | 2.86-3.12 | -1.08    |                   | 0.76                                   | 0.93                       |
| Item 10                             | 91 | 2.92 (0.69) | 1-4   | 2.78-3.07 | -2.09    |                   | 0.73                                   | 0.94                       |
| Global Scale                        | 91 | 2.96 (0.52) |       |           |          | 0.94              |  |                            |

Table 4Descriptives of the PSS.

## 3.3 Features of Score Distribution

Measurements of central tendency, dispersion and sample spread of the items, by symmetry, are presented in Table 4. The K-S normality test rejected the normal distribution for both the subscales and the global scale (P < 0.00).

#### 3.4 Concurrent Validity

The Pearson's correlation, between the PSS and the support that the women felt they had received from the nurses while breastfeeding, showed a correlation coefficient of 0.52 for the total scale, 0.52 for the Information availability care-needs subscale, 0.46 for the Interaction support care-needs subscale and 0.32 for the Technical-scientific care-needs (P < 0.00, n = 91).

## 3.5 Discriminant Validity

The Mann-Whitney test showed that women who had a normal vaginal delivery exhibited, on average, significantly higher levels of satisfaction in comparison to women who had an instrument assisted vaginal delivery or a caesarean. These higher levels of satisfaction were shown for the total scale (P = 0.02) as well as for the Information availability care-needs subscale (P = 0.02) and Interaction support care-needs (P = 0.04). For the subscale Technical-scientific care-needs, a tendency of greater satisfaction can be seen at women with normal delivery, but without significance (P > 0.05), as presented in Table 5.

# 4. Discussion

It is not possible to carry out the ideal translation process in our country as it requires a bilingual population to really understand both the original language and the language it is being translated into. The option the authors adopted follows the Bradley guidelines [20], as both obstetric health and language teaching professionals were involved in the translation process. The authors assumed there was no prejudice in the expression of the items as the professionals involved were fluent in both languages.

Having no opportunity for retest, the option for split-half analysis was appropriate to the authors' methodological orientation [21]. The bipartition method is used in studies in which subject are inaccessible for a second episode of answering the questionnaire [21, 22]. The split-half method and the Spearman-Brown correction are practical in such situations as they don't requiring two administrations to the same sample. The results confirm that the PSS data yielded an adequate correlation between the two halves.

|                                     | Normal delivery | Instrumented delivery | Ν  | U     | Ζ    | Р    | _ |
|-------------------------------------|-----------------|-----------------------|----|-------|------|------|---|
| Technical-scientific care-needs     | 50.7            | 42.2                  | 90 | 779.0 | -1.8 | 0.08 |   |
| Information availability care-needs | 52.9            | 40.8                  | 90 | 704.5 | -2.2 | 0.02 |   |
| Interaction support care-needs      | 52.0            | 41.3                  | 90 | 733.5 | -2.0 | 0.04 |   |
| Global Scale                        | 53.1            | 40.6                  | 90 | 695.0 | -2.3 | 0.02 |   |

 Table 5
 Mean satisfaction values according to the mode of delivery.

## 4.1 Factor Analysis

The patient's perceptions, expressed in their responses, demonstrate how they interpreted the competencies of the nurses. In other studies, participants' perceptions of the nurses were related to the nurse's friendliness, professionalism and how they provide the care that patients need [23]. The principal components expressed a model similar to the original study, by identifying three dimensions, but item 3 was mobilized to another dimension that the authors called Information availability care-needs. So it seems that item 3 might not be implicated in the technical-scientific care-needs concept in the authors' culture. Social change in fertility ages in Portugal have been substantial, and time spent with mothers, showing, explaining, preparing and informing about self-care and baby care is now a great importance. Since the mother's previous contact with child care is often little or none until the delivery of her own baby, mothers may need more attention given by nurses during their stay of 48-72 h in hospital. Indeed the synthetic fertility index has declined significantly over the last thirty years (from 2.13 in 1981 versus 1.35 in 2011). Portugal has Europe's fifteen lowest synthetic fertility index, and has one of the five lowest birth rates in of the twenty-seven countries in European Union. Motherhood models are scarce in an environmental where first children are born later in the mother's life. The mean age of first childbirth for Portuguese women is now 29.2 years [24].

The co-representation of some items shows a close association between the three dimensions. This suggests that, in order to satisfy clients and improve care, nurses need to be knowledgeable and make time to provide information and teach mothering skills interactively, a result that would be expected from a theoretical point of view. Indeed, patients attach great importance to the provision of technical care, including information on their health [3]. For this reason, the way that care was provided was of greatest importance to the women in our study. In the obstetric context, effective and meaningful perinatal care can be achieved if providers have goals in common with their patients [6]. This should be expected, as the mothers need to use the information given by nurses and put it into practice after delivery.

## 4.2 Reliability Analysis

When it came to the internal consistency of both the global scale and subscales, the alpha Cronbach's coefficients were satisfactory and consistent with the Finnish study [12]. The inter-item correlation is high, supporting homogeneity, and the item-total correlation are above 0.30 [25]. Therefore, the alpha Cronbach's in subscales is  $\leq 0.90$ , indicating adequate homogeneity. On the global scale, this coefficient is above 0.90, and in the range recommended for this type of research (i.e., 0.90-0.95) [25].

A normal distribution was not achieved. Normal distribution corresponds to the theoretical requisite that the majority of the studies are ignored if the sample comprises more than 30 subjects, as this number is assumed to be great enough to produce a normal distribution [26, 27]. Almost all of the items were negatively skewed, suggesting that higher values were chosen more often. This tendency towards a skewed distribution was also found at other studies [12]. Their sample is the most elderly of those found in the studies undertaken in a surgical clinical context. In the authors' sample, the tendency towards mothers' satisfaction can

be explained by the obstetric care context. Women in this context are not ill. They are in the midst of a transitional phase of their lives, usually opening to happiness, and most see childbirth as a positive life event [6-14]. Midwives' professional practice in caring for mothers is substantially autonomous, whether it occurs in the patient's home or on the maternity wards. Organizational models that enable nurses to practice autonomously result in higher patient satisfaction [7-28]. This autonomy has been subject to much attention recently. Such autonomy is supported by the organization governing nursing practice in Portugal, and is dependent upon the rules and clinical competencies defined for midwives by their governing body [29].

## 4.3 Concurrent Validity

The PSS and the support provided by the nurses while breastfeeding showed a Pearson's correlation coefficient of around 0.40, which reflects a mild association between them [28-30]. However, taking into account the small size of this convenience sample, these results must be regarded as inconclusive [22].

The authors would expect a positive association between these variables, as women experience a high degree of adaptation during the process of breastfeeding and this maternal practice, requiring special assistance from nurses during the postpartum period [14, 15]. The subscale Interaction support care-needs showed an even weaker positive correlation (r = 0.32), about which even less can be meaningfully said I a convenience sample of this size. It is possible though that it may be that nurses need to develop their communicational skills in order to better support clients [28].

# 4.4 Discriminant Validity

Results with acceptable levels of discriminant validity were obtained using the PSS regarding patient satisfaction with their mode of delivery. The authors expected that women who delivered their babies without the need for instruments or a caesarean section would show higher levels of satisfaction. The authors' results agreed with past studies [31, 32] with respect to the association with the global scale, Information availability care-needs and Interaction support care-needs dimensions. Indeed cesarean section rates are high in Portugal. They are nowadays a critical aspect of the obstetric context. The Report of World Health Organization (WHO) cited a caesarean section rate of 34%, and judged 19.95% of them unnecessary, in the year of 2008 [33]. The practice of cesarean section and instrumental procedures are necessary for the well-being of mother and child in emergencies, but seems no longer to be restricted to emergency situation. Etowa [6] regarding mothers' experience of childbirth emphasizes the physiological process of childbirth, its uniqueness as a life experience, and the spiritual significance attributed to it by some women. Childbirth is a human event, drawing on the biological, social and psychological capacities of women, in a process that nurses-midwives must respect and with which they must endeavor to not hastily interfere, instead giving necessary support and assistance to the laboring mother, and allowing her the time she needs. Such practice improves satisfaction with nursing care in obstetric context

## 5. Limitations

Some methodological aspects limitations affect the authors' results. The validation was performed on the results from a single survey of the patients once and was not retested. The study was conducted with a relatively small convenience sample of women, and not on a larger random or other reliably representative sample. Demographic characteristics of these women might affect the results, once they live in a region where population growth has been negative since 2005 [24]. Although the questionnaire was completed 12 weeks after delivery, some bias may have been introduced by how accurately the women recalled their experiences.

# 6. Conclusions

The study confirms that the PSS is a valid method of measuring satisfaction with obstetric care among Portuguese speakers. Analysis of the psychometric aspects revealed that there were adequate features to enable it to be used in the Portuguese language for obstetric patients. The factor analysis supports a three-dimensional model, but one with a different composition from the model proposed by the original authors. The results provide empirical evidence for instrument modification and adaptation when applying research instruments in different languages and new cultural contexts. PSS has clinical utility and the additional advantages of being short, quick to complete and score. The present validation broadens the instrument's potential and contributes to the development of Portuguese language tools for evaluation of nursing care in obstetric patients. Running a similar studies in other Portuguese-speaking countries such as Angola, Mozambique, Brazil and Timor Leste, is desirable, in order to test the validity of the Portuguese language PSS in international contexts.

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