

Validation of the Parenting Stress Index for Brazilian Portuguese

Validação da escala Índice de Estresse Parental para o português do Brasil

Lindsay Menna Pereira¹

Cláudia Silveira Viera²

Beatriz Rosana Gonçalves de Oliveira Toso²

Ariana Rodrigues da Silva Carvalho²

Bruna Maria Bugs²

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Abstract

Objective: To present the cultural adaptation and validation of the Parenting Stress Index for Brazilian Portuguese.

Methods: Methodological research. For the validation, the scale was applied to 53 mothers of premature infants at the outpatient monitoring clinic of a public teaching hospital in Paraná between November 2013 and July 2014. For the data analysis, descriptive and inferential statistics were used.

Results: The reliability was satisfactory for the complete scale ($\alpha=0.91$) and the domains: Child domain ($\alpha=0.87$) and parents' domain ($\alpha=0.88$). The principal components explained 64.57% of total item variation, being 45.16% from the child's domain and 17.80% from the parents' domain.

Conclusion: The scale was appropriate to assess maternal stress after hospital discharge, endorsing its use in the Brazilian context in new studies to enhance its reliability and validity.

Resumo

Objetivo: Apresentar a adaptação cultural e validação do instrumento *Parental Stress Index* para o português do Brasil.

Métodos: Pesquisa metodológica com a aplicação da escala em validação à 53 mães de prematuros no ambulatório de seguimento de um hospital público de ensino no Paraná, no período de novembro de 2013 a julho de 2014. A análise de dados utilizou estatística descritiva e inferencial.

Resultados: A confiabilidade do instrumento foi satisfatória em seu conjunto ($\alpha=0,91$) e em seus domínios: Domínio da criança ($\alpha=0,87$) e domínio dos pais ($\alpha=0,88$). Os componentes principais explicaram 64,57% da variação total dos itens, sendo 45,16% do domínio da criança e 17,80% do domínio dos pais.

Conclusão: A escala mostrou-se adequada para avaliar o estresse materno após a alta hospitalar, referendando-se seu uso no contexto brasileiro em novos estudos para ampliar sua confiabilidade e validade.

Corresponding author

Cláudia Silveira Viera
Bétula street, 124, 85807-240,
Jd Tropical, Cascavel, PR, Brazil.
clausviera@gmail.com

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¹União Oeste Paranaense de Estudos e Combate ao Câncer, Umuarama, PR, Brazil.

²Universidade Estadual do Oeste do Paraná, Cascavel, PR, Brazil.

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Introduction

The birth of a child at risk and the need for hospitalization at a Neonatal Intensive Care Unit (NICU) can develop insecurities and uncertainties in the parents with regard to this child's life and prognosis. The imaginary considers the NICU as an inhospitable, cold environment, related to the pain of separation and the idea of finiteness.⁽¹⁾ In addition to these aspects, the parents are confronted with a frightening and hardly welcoming environment with unfamiliar people and feel shocked and insecure at the sight of their hospitalized child.⁽²⁾

Premature birth is a situation that requires the hospitalization of Premature Infants (PMI) and implies an increase in different vulnerability factors, for the parents as well as the child, which should be understood based on the biological, environmental and social influences. The parents are confronted with a strategic moment that causes stress during the hospitalization, at discharge and during the monitoring at home.⁽³⁾

In the context of neonatal care, over the last decades, advances have been observed in the technologies and specialized care at the NICU. Thus, the survival rate of the PMI has increased as a result of these transformations. Nevertheless, this advance does not exclude the possibility of developing morbidities, directly interfering in the child's quality of life and turning premature birth into the main cause of neonatal death.⁽⁴⁻⁶⁾ In Brazil, this rate reaches 28.7% of all deaths in children under one year of age.⁽⁷⁾

In that context, the families who receive a PMI who survived the NICU go through an anguishing situation that can interfere in the parents' competence concerning care for the premature child. This situation gets increasingly complicated when the infant is discharged with some special care demands due to the premature birth, which can be aggravated by the adversities of the family context, the low education and family income, as well as the maternal responsiveness to the child's needs, the family stress and the parents' changed competence.⁽⁸⁾

The use of appropriate tools to measure the parents' stress level supports the care planning, permit-

ting intervention in the reduction of stress when the PMI enters the home. This assessment, however, needs to continue after the discharge from the NICU, at the outpatient monitoring clinic and at the Primary Health Care (PHC) services, as maternal depression and anxiety are directly related with negative growth and development outcomes for the PMI, increasing the search for the health services.⁽⁹⁾

In Brazil, the use of stress assessment scales focused on the parents of children who are or have been hospitalized is not usual yet, as many of these scales are international and need to be translated and validated for our language and culture. Tools like the Parenting Stress Index (PSI) have been used in different countries with positive results when applied to parents of discharged children.^(10,11)

In a Brazilian study, one of the versions of the PSI (PSI short form) was used, validated for Portuguese from Portugal, involving parents of children with developmental problems.⁽¹²⁾ The full-form version of the PSI, however, expands the assessment of post-discharge stress, as several aspects on the child's behavior and care requirements, adaptation skills, including the parents' competence, the bond with the child, the parents' role restriction, the marital relationship, aspects of the parents' physical and mental health and the stress of family life are part of the full-form questions.⁽¹³⁾

In a methodological study, including the translation, cultural adaptation and construct validation, the goal is to obtain a tool to assess the stress of PMI's parents after the discharge, which can be incorporated into the work routine of the monitoring services for infants at risk. Therefore, the objective in this paper is to present the cultural adaptation and validation of the Parenting Stress Index (PSI) for Brazilian Portuguese.

Methods

To standardize the development of the tool's cultural adaptation, the five-phase guidelines were followed:⁽¹⁴⁾ a) initial translation; b) back translation; c) assessment by expert committee; d) pre-test and; e) weighting of the scores.

The Parenting Stress Index (PSI) was elaborated to assess the stress of parents whose children were hospitalized. It was developed for application after discharge to the parents of children between one month and 12 years of age.⁽¹³⁾ The author, Dr. Richard R. Abidin, authorized the use of the tool by means of the document Psychological Assessment Resources, Inc. - PAR, for the purpose of translation and cultural adaptation.

Two health professionals knowledgeable on the area of the instrument elaborated the translation. After reaching a consensus between the translations, version one was obtained. Next, this version was forwarded to two English language teachers for the back translation, who were not knowledgeable on the instrument. The back translation was analyzed and its consensus version was compared with the original English version. The goal was to preserve the equivalences of the instructions in the original version for the completion of the items and its respective answer card in the adapted version.⁽¹⁵⁾

Version two of the translation was elaborated and then forwarded to the Expert Committee, which consisted of bilingual subjects with expertise in the concepts under analysis and representative of the group in question, included one physician, one nurse and one psychologist who were faculty members in child health, mental health and maternal-infant health. The experts analyzed the semantic, idiomatic, concept and cultural equivalences.⁽¹⁴⁾

A minimum consensus of 80% is recommended among the committee members, agreeing with all instrument questions, to achieve content equivalence.⁽¹⁴⁾ The version resulting from the experts' analysis led to version three of the instrument, which was forwarded to the author for approval. After obtaining this approval, the pretest started, applied to a sample of 20 mothers of PMI to recognize translation errors and divergences and elaborate the cultural equivalence of the instrument.

The PSI was considered culturally adapted as a consensus of 80% or higher was reached in each subdomain, in the weighting of the scores. This resulted in version four of the instrument, that is, the final version, used to develop its clinical validation. For the construct validity, psychometric analyses were developed through factor and reliability analyses, by means of Cronbach's alpha (α).

The study was developed at a public teaching hospital in Paraná, at the outpatient monitoring clinic for PMI. The sample consisted of 53 mothers of PMI during a consult at the risk outpatient clinic, between November 2013 and July 2014.

The following inclusion criteria were adopted: literate mothers, due to the self-completion of the tool; over 18 years of age or, if the participants were under 18 years of age, the presence of a legal caregiver. Participants were excluded if: they reported using drugs for anxiety and/or had been diagnosed with a psychiatric disorder; mothers of PMI with severe comorbidities, malformations and syndromes of any kind, due to the possible influence of these conditions on the maternal stress level by itself.

The PSI contains 101 items, distributed in two domains (Child Domain and Parent Domain), in addition to 19 other items on the life stress scale, totaling 120 items. The Child and Parent Domain consist of 13 subdomains, six related to the child domain and seven to the Parent Domain. Each item is scored on a five-point Likert scale (5 - I totally agree; 4 - I agree; 3 - I am not Sure; 2 - I disagree; 1 - I totally disagree).⁽¹³⁾

As regards the score that indicates the stress level, scoring each domain item permits three types of results: One per domain, one per subdomain and a total score, resulting from the sum of the Child Domain and the Parent Domain. In any case, the higher the result, the higher the stress level the respondent experiences.⁽¹³⁾

The total score should be the most important guide for the professionals' judgment in order to propose necessary and appropriate interventions. To obtain the stress level, the gross scores, which range from 0 to 505, should be converted in a standard sample table of percentiles from 0 to 99. The interpretation of these levels according to the following scale indicates: Normal stress, percentiles from 16 to 84; high stress, percentiles from 85 to 89; clinically significant stress, equal or superior to the 90th percentile.⁽¹³⁾

Concerning the Child Domain, the maximum gross score is 235, equivalent to the 99th percentile, indicating that some characteristics of the child can be the main factors contributing to the general stress of the parent-child system. As for the Parent

Domain, the maximum gross score is 270 points (99th percentile), which can indicate sources of stress/dysfunction of the parent-child system.⁽¹³⁾

Descriptive statistical analysis was used for the demographic data and the variables in the Child and Parent Domains. Inferential analyses were used for the Life Stress and Defensive Response scores, and the distribution pattern of the total scores in each domain were assessed by means of the Shapiro-Wilk test. As the data were normal, subsequent analyses were based on means and standard deviations.

The construct validity is one of the most important characteristics of a validation instrument. First, the Kaiser Meyer-Olkin (KMO) criterion was applied, in which coefficients superior to 0.5 represent good fit of the model, indicating the fitness of the sample for factor analysis.⁽¹⁶⁾ Next, factor analysis was applied, using the factor extraction method by means of Principal Components Analysis and Varimax rotation. As a factor selection criterion, an eigenvalue superior to one was adopted and loadings superior to 0.4 were considered significant.⁽¹⁶⁾

To analyze the internal reliability of the scale and subscales, Cronbach's alpha was used, ranging from 0 to 1, being considered acceptable when ranging between 0.70 and 0.90.⁽¹⁷⁾

Approval for the study was obtained from the Ethics Committee for Research involving Human Beings under opinion 385.370 (CAAE16348813.7.1001.0107). All ethical premises were complied with.

Results

After the factor analysis of the instrument, the presence of two components was verified, confirming the existing dimensions in the original version. To expand the reliability and validity data of the scale, it should be applied at different locations in Brazil, in different populations and larger samples.

In view of the equivalence between the original scale (PSI) and the translated instrument (IEP), the IEP can be applied to assess the par-

enting stress level after discharge from the NICU to support the planning of care actions for PMIs and their families.

The variation in the mean scores in the domains and subdomains and the assessment of the reliability scores of the IEP is displayed in table 1.

The mean maternal stress level in the Child Domain (CD) was 87.62 ± 12.97 and, in the Parent Domain (PD), 94.26 ± 8.79 . As regards the subdomains, the lowest stress levels for the mothers of the PMIs identified in the CD was related to the child's demandingness, with an average of 83.64 ± 18.71 . On the opposite, the highest stress level in this domain referred to the child's behavioral characteristics that reflect symptoms of Hyperactivity and Distractibility, corresponding to 97.53 ± 3.79 .

In the Parent domain, the lowest stress level was for Competence, with an average 29.13 ± 11.68 , referring to the parents' perception of their capacity to be a parent of a PMI. The highest level in this domain was related to Attachment, with 95.42 ± 9.07 , referring to the proximity between parents and child and their skills to identify and respond to the child's needs. The average gross general stress score was 181.88 ± 8.23 .

Table 1. Descriptive analysis and internal reliability of the Parenting Stress Index (IEP), gross total score and domains

Domains and Subdomains	Mean (Standard Deviation)	Cronbach's Alpha
Child Domain	87.62(12.97)	0.87
Distractibility/Hyperactivity	97.59(3.79)	0.88
Reinforces Parent	96.77(8.01)	0.88
Acceptability	96.47(7.16)	0.88
Adaptability	95.57(10.54)	0.89
Mood	92.19(19.91)	0.88
Demandingness	83.64(18.17)	0.88
Parent Domain	94.26(8.79)	0.89
Spouse/parenting partner relationship	95.75(8.37)	0.89
Attachment	95.41(9.07)	0.91
Role Restriction	92.15(15.72)	0.90
Depression	90.45(13.53)	0.88
Isolation	29.64(8.94)	0.89
Competence	29.13(11.68)	0.88
Health	26.70(6.44)	0.89
General Score	181.88	0.91

The reliability coefficient Cronbach's alpha found for the instrument as a whole was 0.91. For the Child Domain (CD), the coefficient corresponded to 0.87, equaling 0.89 for the Adaptability subdomain and 0.88 for the others. In the Parent Domain (PD), this coefficient was equal to 0.88, ranging between 0.88 (Competence and Depression) and 0.91 (Attachment). In this assessment, the internal consistency among the six items was higher in the CD when compared to the seven items in the PD, as observed in table 1.

As the variables were in accordance for the construct validity analysis ($KMO > 0.05$), two principal components with Varimax rotation were defined for the IEP items (Table 2).

These two components explained 64.57% of the total item variance. The first factor explained 45.16% of the data variance and mainly represented the CD variables (Eigenvalue=7.01). The second factor explained 17.80% of the data variance and represented the PD characteristics (Eigenvalue=2.67).

As regards the factor loadings in the subdomains, Distractibility/Hyperactivity, Adaptability, Reinforces Parent, Demandingness, Mood and Acceptability were correctly fit to the component that represented the CD. In the same domain, however, the subdomains Competence and Depression were also fit, which are part of the PD component in the original scale though. The other subdomains adjusted correctly to the PD component, as observed in table 3.

The distribution characteristics of the scale after the Varimax rotation show that the extracted components are independent and describe the understanding of the correlation structure of the variables and their combinations. In table 3, the factor loadings of each subdomain are displayed, which define the contribution to each of the components.

Discussion

The internal consistency coefficient of the IEP was 0.90, ranging between 0.87 and 0.91 for the subdomains, with similar scores for the CD as well as the

Table 2. Kaiser-Meyer-Olkin test, indication of sample fitness for factor analysis

Domains and Subdomains	KMO
Child Domain (CD)	0.77
Distractibility/hyperactivity (DHA)	0.91
Reinforces parent (RPP)	0.90
Acceptability (AC)	0.86
Adaptability (AD)	0.80
Mood (MO)	0.76
Demandingness (DM)	0.75
Parent Domain (PD)	0.77
Competence (CO)	0.83
Isolation (IS)	0.82
Depression (DE)	0.80
Spouse/parenting partner relationship (SPR)	0.74
Health (HE)	0.65
Attachment (AT)	0.60
Role restriction (RR)	0.58

KMO - Kaiser Meyer-Olkin

Table 3. Factor coordinates after the Varimax rotation

Domains and Subdomains	F1	F2
Child Domain	0.88	0.21
Distractibility/hyperactivity	0.70	0.13
Adaptability	0.60	-0.09
Reinforces parent	0.81	-0.07
Demandingness	0.71	0.20
Mood	0.89	0.01
Acceptability	0.80	0.28
Parent Domain	0.73	0.45
Competence	0.70	-0.04
Isolation	0.39	0.82
Attachment	0.39	-0.79
Health	0.46	0.50
Role restriction	0.47	-0.75
Depression	0.80	0.00
Spouse/parenting partner relationship	0.43	0.63

PD (0.87 and 0.88, respectively). These data are in accordance with other studies,⁽¹⁰⁾ whose Cronbach's alpha coefficients for the CD and PD ranged between 0.82 and 0.93.

The results indicate that the Cronbach's alpha coefficients are acceptable according to the classification presented in the literature^(10,18) and similar to the original PSI data.⁽¹³⁾ In the internal consistency analysis of the scale, which corresponded to 0.90 for the total score and 0.87 and 0.88 for the CD and PD, respectively, the appropriate reliability of the scale items was evidenced. Therefore, the relation between each subdomain and the domain

in question is appropriate, in which the translated questions reflect what the domain is intended to represent, indicating a perfect correlation.

As for the results of the construct validity analysis of the translated version, confirmation was sought using techniques suggested in other validation studies.^(9,19) Thus, using exploratory factor analysis, it was verified that first principal component was more strongly related to the child domain and the second to the parent domain. Both explained 64.57% of the total item variance (the first explained 45.16% of the data variance and the second 17.80%), similar to the findings in the original scale.⁽¹³⁾

Concerning the factor loadings in the subdomains, Competence and Depression, which should fit into the Parent Domain, fit into the Child Domain, indicating that the specific questions in this subdomain can be improved to relate more strongly to the PD.

The IEP is indicated to identify parents who need orientation and support, to recognize a potentially dysfunctional parent-child relationship and children at risk of developing emotional and behavioral problems.⁽²⁰⁾ Its use permits the early recognition of difficulties in the parent-child relationship, with a view to programming prevention and/or therapeutic intervention activities in due time, particularly during the first days of life at home and in PMI monitoring.

Conclusion

As the study presents the cultural adaptation and validation of the Parenting Index (PSI) for Brazilian Portuguese, demonstrating equivalence with the original scale, as obtained by means of internal consistency and construct validity analyses, the IEP is considered a validated tool for use in the population of parents of PMIs in the Brazilian Portuguese version.

Collaborations

Pereira LM, Viera CS, Toso BRGO, Carvalho ARS and Bugs BM declare that they contributed to the conception of the study, interpretation of the data, relevant critical review of the intellectual content and approval of the final version for publication.

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