Validity evidence of the *Bienestar Materno en Situación de Parto* scale

Evidências de validade da escala de *Bienestar Materno en Situación de Parto*

Evidencias de validez de la Escala de Bienestar Materno en Situación de Parto

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Abstract

Objective: To describe the process of cross-cultural adaptation and validity and reliability evidence of the Brazilian version of the *Bienestar Materno en Situación de Parto* scale (Maternal Well-being in Childbirth Scale).

Methods: This is a methodological study carried out through translation, back-translation, assessment by a committee of judges, pre-test, and validation. Validation included participation of 500 mothers who underwent vaginal childbirth. Exploratory and confirmatory factor analyzes were performed.

Results: After analysis by judges, the suggested changes were applied, and all items showed agreement among evaluators above 80%. Exploratory and confirmatory factor analysis indicated a satisfactory fit of the model with three dimensions and good reliability indexes (alpha = 0.95 and omega = 0.94).

Conclusion: The short Brazilian version of the *Bienestar Materno en Situación de Parto* scale is a 16-item scale that presents good validity and reliability evidence.

Resumo

Objetivo: Descrever o processo de adaptação transcultural e as evidências de validade e confiabilidade da versão brasileira da *Escala de Bienestar Materno en Situación de Parto*.

Métodos: Estudo do tipo metodológico realizado por meio das etapas de tradução, retrotradução, avaliação por comitê de juízes, pré-teste e validação. O processo de validação incluiu a participação de 500 puérperas que realizaram parto vaginal. Foram realizadas análises fatoriais exploratórias e confirmatórias.

Resultados: Após a análise dos juízes, foram aplicadas as alterações sugeridas e todos os itens apresentaram concordância entre os avaliadores acima de 80%. A análise fatorial exploratória e confirmatória indicaram um ajuste satisfatório do modelo com três dimensões e bons índices de confiabilidade (alpha = 0,95 e ômega = 0,94).

Conclusão: A versão brasileira abreviada da *Escala de Bienestar Materno en Situación de Parto* é uma escala de 16 itens que apresenta boas evidências de validade e confiabilidade.

Resumen

Objetivo: Describir el proceso de adaptación transcultural y las evidencias de validez y fiabilidad de la versión brasileña de la Escala de Bienestar Materno en Situación de Parto.

Métodos: Estudio metodológico realizado mediante las etapas de traducción, retrotraducción, evaluación por comité de jueces, prueba piloto y validación. El proceso de validación incluyó la participación de 500 puérperas que tuvieron parto vaginal. Se realizaron análisis factoriales exploratorios y confirmatorios.

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Conflicts of interest: none.

Resultados: Después del análisis de los jueces, se aplicaron las modificaciones sugeridas y todos los ítems presentaron concordancia entre los evaluadores superior al 80 %. Los análisis factoriales exploratorios y confirmatorios indicaron un ajuste satisfactorio del modelo con tres dimensiones y buenos índices de fiabilidad (alfa = 0,95 y omega = 0,94).

Conclusión: La versión brasileña abreviada de la Escala de Bienestar Materno en Situación de Parto es una escala que presenta buenas evidencias de validez y fiabilidad.

Introduction

Satisfaction with care during childbirth directly interferes with women's and their newborns' health and well-being, causing psychological, physical and social effects.[1]

The World Health Organization (WHO) recommends that intrapartum care be offered in order to provide more positive birth and childbirth experiences. A positive childbirth experience is considered to be one that met the most elementary personal and sociocultural beliefs and expectations of women and their families. This includes the birth of a healthy baby in a clinical and psychologically safe environment, using ongoing support practices, a kind and technically competent team.[2]

Women satisfied with assistance have more positive feelings of accomplishment and self-esteem, which generates positive experiences and expectations in relation to future deliveries and a better adaptation to the maternal role.[1]

On the other hand, dissatisfied women are more likely to have postpartum depression, post-traumatic stress symptoms and to give preference to cesarean section in subsequent deliveries.[3-5]

Well-being and satisfaction correspond to subjective perceptions regarding the balance, harmony and vitality of human beings, perceived at different levels. At the lowest levels of well-being, people find themselves in a situation of illness and, at the highest, they experience a feeling of satisfaction.[6]

The concept of well-being, historically associated with the concept of wealth until the 1960s, came to be considered based on assessments of life as a whole, including subjective aspects; this had a direct impact on increase in studies on subjective well-being,[7] defined as the combination resulting from positive and negative affection and general satisfaction with life.[8] In this regard, this concept can be understood as being broader and comprising a dimension greater than satisfaction but associated.

This is an internal experience of each individual that issues a judgment of how they feel and their degree of satisfaction, influenced during labor and childbirth by painful feeling, personal control and social support.[1,9]

Although some studies may elucidate women's perspective in relation to childbirth,[10-14] the experiences lived are diverse, without consensus and uniformity in proposals for assessing the care provided.

Of the 36 instruments analyzed in a review, 29 were not assessed in relation to their psychometric properties. Moreover, there is a great difference between them in terms of application time, dimensions and number of items. Only instruments in English and French were included in this review.[15]

In Brazil, two instruments were used to assess women's satisfaction with childbirth.[16,17] The first, adapted from *Questionário de Experiência e Satisfação com o Parto* (QESP - Experience and Satisfaction with Childbirth Questionnaire), developed in Portugal,[18] uses two subscales from the original version, with a total of 41 questions regarding positive and negative experiences experienced in childbirth.[16] The second instrument contains questions that measure satisfaction with general health care from the World Health Survey (WHS)[19], and assesses items related to general satisfaction with childbirth, postpartum care, neonatal and institutional violence.[17]

Some aspects still little explored were identified in the *Bienestar Materno en Situación de Parto* (BMSP) scale, developed aiming at measuring Chilean women's well-being in childbirth in a multidimensional way. The concept of well-being that originated the instrument was obtained through a qualitative approach, based on Grounded Theory, used to explore social phenomena and experiences in health. Focus groups were carried out with 29 puerperal women of low obstetric risk vaginal childbirth. The first version had 42 items, grouped into eight factors.[20] The second version, called BMSP 2, has 47 items distributed

in seven domains: *qualidade do relacionamento durante o cuidado* (quality of relationship during care) (13 items); *autocuidado e conforto* (self-care and comfort) (9 items); *condições que propiciam o contato mãe e filho* (conditions that provide contact between mother and child) (4 items); *cuidado despersonalizado* (depersonalized care) (6 items); *participação familiar contínua* (continuous participation of family) (4 items); *cuidado oportuno e respeitoso* (timely and respectful care) (6 items); *ambiente físico confortável* (comfortable physical environment) (5 items). BMSP 2 is a Likert-type scale, whose responses vary between one (strongly disagree) and five (strongly agree), with a neutral option (neither agree nor disagree). Through the instrument's total score, it is possible to establish the three possible levels of maternal well-being: excellent, adequate, and malaise.[21]

Maternal well-being assessment during childbirth is essential to assess the experience of women regarding timely and respectful care, the quality of relationship during care and the conditions that provide contact between mother and child. These are aspects directly related to effective communication and the promotion of a respectful maternal care.[12,20]

Within this scenario, it can be understood that there is a negligence regarding maternal well-being measurement, since prior to this survey, there is no evidence from other Brazilian studies that contribute specifically to this aspect.

As BMSP 2 was developed by Chilean midwives, it has similarities to Brazilian culture, when compared to other cultures and languages. Moreover, it appears that the aspects assessed on the scale are similar to those identified in the narratives regarding the experience of childbirth expressed by women assisted at a freestanding birthing center.[22]

Considering the aforementioned, this study aimed to describe the cross-cultural adaptation process and analyze the validity and reliability of BMSP 2, Brazilian version.[21]

Methods

This is a methodological study approved by a Research Ethics Committee, under Opinion 170.412. Authorization to perform cultural adaptation of the Chilean BMSP 2 scale into Brazilian Portuguese was granted by the authors of the original instrument, written in Spanish. All participants in this study signed the Informed Consent Form (ICF).

According to Beaton et al. (2000), the cross-cultural adaptation process of an instrument for use in a new country seeks to achieve equivalence between the versions of origin and destination. Therefore, items should not only be translated, but also culturally adapted, to maintain content validity regarding concept. In this regard, cross-cultural adaptation was carried out by developing stages of translation into Brazilian Portuguese, synthesis of translations, back-translation, assessment by an experts committee and pre-test.[23]

The composition of the committee members was based on knowledge of the theme related to childbirth assistance, mastery of Brazilian Portuguese and Spanish languages and knowledge of construction and adaptation processes of instruments for measuring psychosocial variables. After the analyzes, the changes suggested individually by judges were applied, accepting as items equivalent with at least 80% agreement among evaluators, as recommended by Pasquali.[24]

The instrument's pre-test and validation were developed with women who received childbirth assistance at a public hospital in the city of São Paulo, from January to April 2013. This institution has a freestanding birthing center, an obstetric center, an operating room, an adult ICU unit, emergency care and specialties clinic, and is characterized by tertiary care for the various areas of women's health care. Childbirth assistance is provided by physicians and nurse-midwives.

To analyze the scale's psychometric properties, 500 puerperal women who had a vaginal childbirth at a freestanding birthing center and obstetric center participated. This number was established by the proportion of 10 puerperal women for each item (47 items).[25]

This study included postpartum women who stayed at least four hours in labor at the institution, were 18 years of age or older, who had four or more years of study, no complications during pregnancy

and childbirth and were with their newborns in the rooming-in sector. The data for this research were obtained in the rooming-in sector, from 24 to 48 hours after childbirth. A specific instrument was developed for population characterization, composed of sociodemographic and obstetric data.

To test the psychometric properties, validity and reliability evidence of BMSP 2, Brazilian version was analyzed. Face and content validities were verified by the judge committee members and by the target population during pre-test.

The construct's validity related to the instrument's dimensionality was verified by means of exploratory factor analysis (EFA), obtained through parallel analysis based on polychoric correlation matrix.[25,26] Factor extraction was performed using unweighted least squares (ULS) method with promax rotation, and it was adopted as a minimum criterion for factor loadings and communalities ≥ 0.40.[25] A Kaiser-Meyer-Olkin (KMO) ≥ 0.70 and a significant Bartlett's test of sphericity (BTE) were used to indicate the sample's adequacy.[25]

To verify the fit of the final model, confirmatory factor analysis (CFA) was developed using maximum likelihood method. To analyze the models, to verify which one fitted better, goodness of fit index (GFI) and comparative fit index (CFI) adjustment indexes were analyzed. A concept analogous to CFI is the normed fit index (NFI), a comparative fit index interpreted as a percentage of increment in fit over the null model. The Tucker-Lewis coefficient (TLI) and the standardized root mean square residual (SRMR), which refer to the standardized average of residuals in discrepancies between the observed matrix and the model, were also analyzed.[25,27]

Reliability was assessed using Alpha[28] and Omega indicators.[29] Two indicators were adopted to increase the reliability of interpretation, as there have been inconsistencies in reliability through Cronbach's Alpha.[28] Reliability indexes suffer from the nature of the data distribution and the sample size, and their values may be high due to long scales, parallel and/ or redundant items or restricted coverage of the construct under analysis.[30] Reliability index values ≥ 0.7[28] have been considered adequate. Data were analyzed using Factor 9.2.0, a statistical program.

Results

The translations of the instrument from Spanish into Brazilian Portuguese were performed by two Brazilian independent translators fluent in Spanish. The synthesis, Brazilian Portuguese version AB (PVAB), was submitted to two native Spanish-speaking translators who have lived in Brazil for a few years. The back-translations were performed individually, and, from their synthesis, the Spanish version AB (SVAB) emerged. When compared to the original version, there were no items that needed changes because the meaning was kept.

The instrument's PVAB was presented to a panel of judges composed of nine people. Four of them analyzed semantic and idiomatic equivalences and five analyzed cultural and conceptual equivalences of all items.

The changes suggested individually by judges after analysis were applied. All items showed consensus among evaluators above 80%. Incorporating these suggestions into the instrument gave rise to the Brazilian Portuguese version regarding consensus among judges (PVCJ), which was then submitted to pre-test.

The test technique was chosen to analyze the items' comprehensibility. The instrument was applied to ten puerperal women who had characteristics similar to those of the study sample. As there was no difficulty in filling out or understanding the scale, PVCJ remained as BMSP 2, Brazilian version. Participants in this stage were not included in the study sample.

At the end of this stage, face validity and validity related to the content of BMSP 2, Brazilian version were obtained.

To analyze the psychometric properties, BMSP 2, Brazilian version was applied to 500 mothers. As for sociodemographic characteristics, 396 (79.2%) women lived with their partners, were on average 26 (+5.6) years old and 224 (44.8%) identified themselves as white. A total of 321 (64.2%) participants had between 9 and 11 years of study. Monthly family income was one to two minimum wages for 329 (65.8%) women; 21 (4.2%) received a minimum wage per month. A total of 353 (70.6%) partici-

pants did not have a paid employment. The most mentioned religion was Catholic, by 235 (47.0%) women, followed by Evangelical, mentioned by 130 (26.0%).

As for obstetric characteristics, 179 (35.8%) were primiparous and 321 (64.2%) had already had one or more pregnancies. As for gestational age, 320 (64%) women were between 39 weeks and 40 weeks and 6 days old. Most participants had attended six or more consultations during prenatal care (99.2%). Moreover, 228 (45.6%) women pointed out that their pregnancy was planned.

Although the original version was designed with seven factors, the initial EFA of the 47 items recommended five factors (KMO 0.91; BTE 27755.8 p <0.001), with a total explained variance of 71.8%. However, excluding factors composed of less than three items, items with saturation problems (which saturated in more than one dimension), with low communality (less than 0.30), collinear or with double negative and inversion of responses, 16 items remained distributed over three factors (KMO 0.90; BTE 8673.3 p <0.05) which together explain 86.4% of the phenomenon, as shown in Table 1.

Table 1. Exploratory factor analysis of the Brazilian version of BMSP 2

	F1	F2	F3	Communality
Eigenvalue	8.932829565	2.666107433	1.749355964	
Total variance explained	0.56825	0.74520	0.86396	
Cronbach's alpha	0.94	0.95	0.92	
Item 1		0.961		0.878
Item 2		0.939		0.799
Item 4		0.932		0.826
Item 6		0.946		0.918
Item 7		0.859		0.743
Item 8		0.851		0.828
Item 9		0.831		0.825
Item 14	0.774			0.833
Item 15	0.902			0.869
Item 16	0.984			0.926
Item 17	0.989			0.890
Item 18	0.853			0.726
Item 44			0.775	0.614
Item 45			0.952	0.917
Item 46			0.968	0.932
Item 47			0.909	0.825
Correlation between factors				
F1	1.000			
F2	0.594	1.000		
F3	0.407	0.322	1.000	

It was observed that all items are highly correlated with the factors to which they belong and all have high commonality. The items were reorganized according to the factorial load in descending order, originating the shortened version of BMSP 2 (Brazilian version).

Concerning CFA, it was observed that the shortened instrument with 16 items has adjustment indexes (GFI = 0.88; NFI = 0.91; CFI = 0.92; TLI = 0.90; SRMR = 0.112), in addition to excellent reliability (alpha = 0.95; omega = 0.94). Therefore, the best set of items for the instrument in its short version consists of 16 items, organized in three dimensions and which together explain 86.4% of the phenomenon of maternal well-being in childbirth.

The three dimensions' name was related to the item with the greatest factor loading, maintaining the name proposed by the author of the instrument, as shown in Chart 1.

Well-being classification range was determined from estimated cut-off points, adjusting a simple linear regression model between the score of BMSP 2, Brazilian version, according to the score of the Brazilian version with 47 items. With a determined line, the shortened version's cut-off points were found. Therefore, through the instrument's total score, it is possible to explore maternal well-being at three levels: excellent (score> 63), adequate (score between 55 and 63) and malaise (score <55). Chart 2 shows the shortened version of *Escala de Bem-estar Materno em Situação de Parto* (Brazilian version).

Discussion

The lack of other similar scales validated in Brazil was a limitation for this study, which did not allow comparisons. It is also noteworthy that it is impossible to perform the test-retest in order to analyze the stability of the instrument, since it must be assessed with the same sample and in a short period of time.

Making this instrument available for use by researchers and professionals working in the field in Brazil can provide important contributions to decision-making in care. Such an instrument is

Chart 1. Dimensions of the shortened version of BMSP 2 (Brazilian version)

Dimensions	Items	Factor loading
Cuidado oportuno e respeitoso	1-Fui informada cada vez que me administravam algum medicamento.	0.989
	2-Se16Se preocuparon de cuidar mi intimidad y la de las otras mujeres que vivieron la experiencia de parto junto con preocuparam em cuidar da minha privacidade e de outras mulheres que viveram a experiência do parto junto comigo.	0.984
	10-Senti que as pessoas que me atenderam conheciam e faziam bem o seu trabalho.	0.902
	12-Em todos os18.En cada uno de los lugares donde estuve la iluminación era adecuada lugares onde estive, a iluminação era adequada.	0.853
	16-As pessoas que me atenderam se relacionaram bem comigo.	0.774
Qualidade do relacionamento durante o cuidado	4-Durante todo o processo de parto, os profissionais me orientaram, me disseram o que fazer e me encorajaram.	0.961
	6-Acho que fui bem atendida, de maneira muito profissional.	0.946
	7-Senti-me sempre acompanhada por algum profissional.	0.939
	8-Todas as vezes que precisei, pude estar com meu parceiro ou outra pessoa importante para mim.	0.932
	11-Pude dispor de anestesia sempre que precisei.	0.859
	13-OObservé orden y limpieza en cada uno de los lugares donde estubservei ordem e limpeza em cada um dos lugares onde estive.	0.851
	14-Senti que os procedimentos que realizaram em mim foram feitos corretamente.	0.831
Condições que propiciam o contato mãe e filho	3-Tive a possibilidade de Tuve la posibilidad de amamantar a mi guagua al poco tiempo de haber nacidamamentar meu bebê logo após o nascimento.	0.968
	5-No momento do parto e logo após o nascimento do meu bebê, pudemos estar em contato pele a pele.	0.952
	9-Os profissionais que me atenderam foram cuidadosos e respeitosos, sem invadir minha privacidade nos momentos em que queria ficar tranquila.	0.909
	15-Sempre foi observado um tratamento respeitoso por parte do pessoal de saúde.	0.775

Chart 2. Shortened version of *Escala de Bem-estar Materno em Situação de Parto* (Brazilian version)

O seguinte questionário identifica o nível de bem-estar das mães que vivenciaram o processo de parto. Pedimos que leia cuidadosamente este documento. Nele, você encontrará algumas afirmações que representam situações que você pode ter vivido desde que chegou à maternidade até o nascimento do seu bebê, situações que a fizeram "sentir-se bem" ou "sentir-se mal". Com cada uma dessas afirmações, você pode discordar totalmente (pontuação 1) até concordar totalmente (pontuação 5). Por favor, marque com um x seu grau de concordância. Marque apenas uma resposta para cada afirmação. Se marcar mais de uma, a resposta será anulada. Sinta-se completamente livre para responder. O sucesso desta avaliação dependerá de que suas respostas reflitam o que você realmente vivenciou nesta experiência. No caso de não entender qualquer das situações expressas no questionário, pedimos para consultar a pessoa responsável.

Item	Discordo totalmente	Discordo	Não concordo nem discordo	Concordo	Concordo totalmente
	1	2	3	4	5
1-Fui informada cada vez que me administravam algum medicamento.					
2-Se16Se preocuparon de cuidar mi intimidad y la de las otras mujeres que vivieron la experiencia de parto junto con preocuparam em cuidar da minha privacidade e de outras mulheres que viveram a experiência do parto junto comigo.					
3-Tive a possibilidade de Tuve la posibilidad de amamantar a mi guagua al poco tiempo de haber nacidamamentar meu bebê logo após o nascimento.					
4-Durante todo o processo de parto, os profissionais me orientaram, me disseram o que fazer e me encorajaram.					
5-No momento do parto e logo após o nascimento do meu bebê, pudemos estar em contato pele a pele.					
6-Acho que fui bem atendida, de maneira muito profissional.					
7-Senti-me sempre acompanhada por algum profissional.					
8-Todas as vezes que precisei, pude estar com meu parceiro ou outra pessoa importante para mim.					
9-Os profissionais que me atenderam foram cuidadosos e respeitosos, sem invadir minha privacidade nos momentos em que queria ficar tranquila.					
10-Senti que as pessoas que me atenderam conheciam e faziam bem o seu trabalho.					
11-Pude dispor de anestesia sempre que precisei.					
12-Em todos os18.En cada uno de los lugares donde estuve la iluminación era adecuada lugares onde estive, a iluminação era adequada.					
13-OObservé orden y limpieza en cada uno de los lugares donde estubservei ordem e limpeza em cada um dos lugares onde estive.					
14-Senti que os procedimentos que realizaram em mim foram feitos corretamente.					
15-Sempre foi observado um tratamento respeitoso por parte do pessoal de saúde.					
16-As pessoas que me atenderam se relacionaram bem comigo.					

relevant for the improvement of well-being indicators in childbirth, according to women's perspectives regarding the process. It is worth highlighting the appropriate applicability of the shortened version for use during the period after childbirth due to the low degree of difficulty and its rapid application.

The cross-cultural adaptation stages were carried out according to the widely used scientific literature recommendations.[23]

There is no consensus on the best way to carry out the cross-cultural adaptation process, although, in general, the guidelines follow similar processes. Even without the existence of a guideline that is considered a consensus, some steps are indispensable, such as translation/back-translation, review by a committee of experts and pre-test. All of these steps were performed in this study.[31] During the translation and back-translation process, no differences were found that compromised the meaning of the text.

The committee of judges was made up of professionals with proven knowledge about the methodology of cultural adaptation of instruments or regarding assistance to women during childbirth. Agreement between judges regarding the equivalence between the original and the translated instrument proved to be excellent. Only a few changes were suggested to facilitate the understanding of the items by the Brazilian population.

The EFA showed adequacy of a three-dimensional model, being congruent with the concept of Uribe et al.,[20] according to which the well-being construct is perceived as a complex multidimensional, dynamic and interdependent phenomenon of women's satisfaction during their childbirth process, which is a result of a series of situations that are related to each other, ordered around good treatment. It was found that, for the Brazilian population, well-being involves a set of technical and human factors. The quality of the relationship during care, timely and respectful care and the conditions that provide contact between mother and child were emphasized.

These results reiterate the findings obtained in studies assessing women's satisfaction with childbirth; the most valued factors were the relationship with the team and the compassion, empathy and respect given by the professionals. Furthermore, the provision of guidance on the progress of labor, the involvement of women in decisions about pain management and support for breastfeeding stood out.[12]

The total explained variance of the shortened version of BMSP 2 (Brazilian version) (86.4%) showed a higher value than the original version (57.3%), and communalities ranged from 0.61 to 0.93, indicating an excellent contribution of items to assess the phenomenon.[21,32] This result shows that the 16 items explain 86.4% of the phenomenon of well-being in childbirth for the Brazilian population. It should be noted that, in the original version, the domain "*qualidade do relacionamento durante o cuidado*" (quality of relationship during care) presented an eigenvalue of 14.6 and total explained variance of 31.1%, showing a greater weight of this attribute in BMSP 2; the other six domains, as a whole, account for 26.2% of maternal well-being.

For the shortened version of BMSP 2 (Brazilian version), all factor loadings were above 0.77, i.e., they presented a strong correlation with each dimension. Furthermore, high correlations between domains indicate assessment of the same phenomenon and support the instrument's construct validity.[32]

In CFA, the model adjustment indexes obtained reveal a good suitability of the model,[25,27] confirming the three-dimensionality, which resulted from EFA.

The results achieved in the study of the reliability of the shortened version of BMSP 2 (Brazilian version) reveal an alpha of 0.95 and an omega of 0.94, demonstrating essential similarities with the published standards for the original version (alpha = 0.93).[21]

This study focused on content, face and construct validity, which showed satisfactory levels. The contemporary state of the art points to the search for evidence of validity. Therefore, the instrument must undergo several techniques to ensure its structure, functioning and accuracy. In this regard, other studies must be carried out in Brazil to continue the search for evidence on its validity and reliability, with analysis of other psychometric properties.

Conclusion

The process of cross-cultural adaptation and validation of the Brazilian version of the *Bienestar Materno en Parto de Parto 2* scale for Portuguese Brazil fol-

lowed all steps recommended by the scientific literature. In the cross-cultural adaptation stage, idiomatic, semantic, cultural and conceptual equivalences with the original version were confirmed. According to an analysis of psychometric properties, the shortened Brazilian version of BMSP 2 is a three-dimensional scale of 16 items that presents good validity and reliability evidence to measure maternal well-being during childbirth, and can be used in the daily care of women and/or pregnant women.

Collaborations

Jamas MT, Ferretti-Rebustini REL, Rebustini F, Gonçalves IR, Gouveia LMR and Hoga LAK contributed to project design, data analysis and interpretation, article writing, relevant critical review of intellectual content, and approval of the final version to be published.

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