Original Article

Translation and Psychometric Properties of the Persian Version of Neonatal Intensive Care Unit Parental Belief Scale in Iranian Parents

Sajjad Reisi[1], Zahra Alipour[2], Aliakbar Foroughi[3], Kheirollah Sadeghi[3], Reza Bahrami[4], Aliakbar Parvizifard[3]

[1]Student Research Committee, Kermanshah University of Medical Sciences, Kermanshah, Iran, [2]Department of Physiology, Faculty of Medicine, Kermanshah University of Medical Sciences, Kermanshah, Iran, [3]Department of Clinical Psychology, School of Medicine, Kermanshah University of Medical Sciences, Kermanshah, Iran, [4]Department of Pediatrics, Neonatal Research Center, Shiraz University of Medical Sciences, Shiraz, Iran

Abstract

Background: This study is done to determine the translation and psychometric properties of the Persian version of Neonatal Intensive Care Unit Parental Belief Scale (NICU-PBS) in Iranian parents. **Materials and Methods:** The present study was conducted by the descriptive cross-sectional method. This research was conducted from January to August 2021. The population included all parents whose infants were hospitalized in NICUs of two university-affiliated hospitals (Kermanshah University of Medical Sciences and Shiraz University of Medical Sciences). Out of them, 291 subjects were selected by the purposeful sampling method. The utilized questionnaires included a demographic information form, NICU-PBS, Beck Depression Inventory, and Maternal role adaptation scale. The descriptive statistical indexes, Cronbach's alpha, intra-class correlation coefficient, and Pearson's correlation coefficient were used for data analysis. Also, to evaluate the construct validity of the NICU-PBS, we used Confirmatory Factor Analysis (CFA). **Results:** The participants included 97 fathers (33.33%) and 194 mothers (66.67%). According to the CFA results, the three-factor model NICU-PBS (confidence in the parental role, parent–child interaction, parental knowledge of the NICU) was approved in Iranian parents (χ^2/df = 1.79; $p < 0.001$; GFI = 0.91; AGFI = 0.89; CFI = 0.91; RMSEA = 0.05). NICU-PBS with BDI-II (r = -0.42) has divergent validity, and material role adaptation (r = 0.46) has moderate and acceptable convergence validity ($p < 0.01$). The results of Cronbach's alpha for the total NICU-PBS were 0.85. **Conclusions:** The results demonstrated the proper and acceptable validity and reliability of NICU-PBS among Iranian parents.

Keywords: *Infant, intensive care unit, parents, psychometrics, reliability, validity*

Introduction

According to the World Health Organization (WHO), in 2020, 13.4 million babies were born pre-maturely, meaning that 1 in 10 babies worldwide was "born too soon". Complications of pre-term birth remain the leading cause of death for children under 5 years of age, accounting for approximately 1 million infant deaths worldwide in 2021, the same figure as 10 years ago.[1] The stress of pre-mature birth and newborn care puts significant mental and physical pressure on the mother and has an adverse effect on her sense of peace.[2] "The physical environment of NICU is considered stressful by the parents".[3] Being separated from the infant, experiencing parental role alterations, intolerance of indecision concerning the situation of the baby, and undergoing the fear caused by feeling incompetent in taking care of the baby are some factors that put parents under pressure and stress.[4] Excessive worry and anxiety are common experiences for parents whose newborns are hospitalized in Neonatal Intensive Care Units (NICUs).[5]

Parents who feel safe in the NICU tend to communicate sooner with their babies. The stress undergone by the parents, which may affect the infant–parent interactions, could result from their unawareness and the unexpected hospital rules.[6,7] Thus, considering that the hospitalization of newborns in the NICU could have unfavorable psychological outcomes for the parents, using suitable psychological instruments is necessary for evaluating the beliefs of parents concerning their abilities and NICUs during the hospitalization of their newborns. Evaluating these beliefs is a requirement in various cultures. Based on searches conducted in Iranian and international databases, no scale in Iran evaluates parents' beliefs about NICUs. In this regard, the Neonatal Intensive Care Unit Parental Belief Scale (NICU-PBS) is

How to cite this article: Reisi S, Alipour Z, Foroughi A, Sadeghi K, Bahrami R, Parvizifard A. Translation and psychometric properties of the Persian version of Neonatal Intensive Care Unit Parental Belief Scale in Iranian parents. Iran J Nurs Midwifery Res 2024;29:431-7.

Submitted: 10-Jan-2023. **Revised:** 26-Dec-2023. **Accepted:** 30-Dec-2023. **Published:** 24-Jul-2024.

Address for correspondence:
Dr. Aliakbar Parvizifard, Department of Clinical Psychology, School of Medicine, Kermanshah University of Medical Sciences, Kermanshah, Iran.
E-mail: aliakbarparvizifard8692@gmail.com, parvizia@yahoo.com

Access this article online

Website: https://journals.lww.com/jnmr

DOI: 10.4103/ijnmr.ijnmr_7_23

Quick Response Code:

one of the tools used in some countries to evaluate parents' beliefs about the NICU.

The NICU-PBS is a self-report scale designed to assess parents' beliefs about the pre-term infant and their role during hospitalization.[8] The NICU-PBS was first developed by Melnyk *et al*. in America (2014). This questionnaire includes 18 items and three factors (confidence in the parental role, parent–child interaction, and parental knowledge of the NICU).[8,9] This scale has been examined and evaluated by Piva *et al*. (2018) in Brazil[10] and Kardas Özdemir and Küçük Alemdar (2019) in Turkey.[3] So, the current study aims to determine the translation and psychometric properties of the Persian version of NICU-PBS in Iranian parents.

Materials and Methods

The present study was conducted by the descriptive cross-sectional method and aimed at evaluating psychometric properties. The guidelines proposed by Beaton *et al*.[11] were used for the NICU-PBS translation process in Iranian parents whose infants were admitted to the NICU. The direct translation of the original NICU-PBS scale into Persian was conducted by two bilingual translators whose mother tongue was Persian. After comparing these translations and the translators agreeing on the Persian version of NICU-PBS, the Persian version was re-translated by two bilingual translators specializing in English. Then, a group of experts (including linguists, clinical psychologists, and methodologists) evaluated the translation. Finally, they agreed on the final version of NICU-PBS in Persian.

This research was conducted from January to August 2021. The population included all parents whose infants were hospitalized in NICUs of two university-affiliated hospitals (Kermanshah University of Medical Sciences and Shiraz University of Medical Sciences) in 2021. The minimum hospitalization period for infants was 5 days, and the maximum was 30 days.

The intended hospitals were chosen during the initial steps. The participants were then selected using purposeful sampling among all parents who had sought professional assistance in NICUs. The number of participants in the current study was 308, which dropped by 291 after the initial screening and elimination of 17 clients due to their deficient completion of questionnaires or biased answers.

Inclusion criteria: 1) The aliveness of pre-mature infants; 2) willingness and informed consent of the parents regarding their presence and participation in the investigation; 3) having no history of substance or alcohol abuse, psychedelic drugs, or other drugs (for the parents); 4) not being diagnosed with any types of chronic psychological disorders; and 5) having at least a secondary school diploma. *Exclusion criteria:* 1) Not completing the intended research questionnaires and 2) filling out the questionnaires with invariant or biased answers.

The demographic information form contained items concerning gender, age, education, socio-economic status, length of in-hospital stays (for the infants), types of hospitals (private versus government), and the province of residence (for the parents).

NICU-PBS was developed by Melnyk *et al*. (2014) in America.[8] NICU-PBS consists of 18 items and the following sub-scales: confidence in the parental role (items 2, 3, 5, 6, 8, 9, 10), parent–child interaction (items 11, 12, 13, 14, 15, 16, 17, 18), and parental knowledge of the NICU (items 1, 4, 7). All items are scored on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The total scores vary between 18 and 90. Higher scores indicate that the parents adopt more positive attitudes toward NICU.[3] In research by Melnyk *et al*. (2014) for the first version of this measurement, Cronbach's alpha and the test–re-test coefficient ranged between 0.75 and 0.91 and between 0.84 and 0.92, respectively. Also, in research by Melnyk *et al*.[8] (2014), the divergence validity of NICU-PBS with the Parental Stress Scale, BDI-II, and State Anxiety Inventory was reported as -0.28, -0.24, and -0.32, respectively ($p < 0.001$). Also, based on the Confirmatory Factor Analysis (CFA), the fit indices for NICU-PBS are equal to (χ^2/df = 3.69; p = <0.001; CFI = 0.87; SRMR = 0.20; RMSEA = 0.08). Piva *et al*.[10] (2018) reported a test–re-test coefficient of 0.98 and a Cronbach's alpha of 0.92 in the Brazilian version. Moreover, Kardas Özdemir and Küçük Alemdar (2019) reported Cronbach's alpha of 0.90 in the Turkish version.[3]

Beck Depression Inventory (BDI-II) was designed by Beck for the assessment of depression (1963) and was revised (1994). All 21 items of BDI are scored between 0 and 3 on a four-point Likert scale. The total scores vary between 0 and 63, with higher scores indicating more severe levels of depression. Each item is designed for a specific depressive symptom. In the original version, the validity of the BDI-II criterion with the Hamilton depression scale (r = 0.71) and the 1-week re-test reliability of the BDI-II was reported to be above r = 0.93 and its Cronbach's alpha = 0.91.[12] In the study by Ghassemzadeh *et al*. (2005), the alpha and test–re-test coefficients of BDI-II are 0.87 and 0.74, respectively, and its correlation with BDI-I is 0.93.[13] Furthermore, Hooman *et al*. (2016) concluded that BDI-II has a reliability of 0.88.[14] In the present study, Cronbach's alpha of BDI-II was equal to 0.75.

Heydarpour *et al*.[15] (2017) designed and developed a maternal role adaptation scale and assessed its psychometric properties. This scale includes 32 items, and items 9 to 12 reversely scored. Each item is allocated a score between 1 and 5 (strongly disagree to strongly agree) using a five-point Likert scale. The minimum and maximum scores in this questionnaire are 32 and

160. Higher scores are indications of more adaptations to maternal roles. Cronbach's alpha for the total scale is 0.77, the intra-cluster correlation coefficient is 0.81, and the content validity index (CVI) of this scale was reported as 0.93. In the present study, this scale was used only for mothers, and Cronbach's alpha of this scale was 0.82.

SPSS-21 statistics software (SPSS Inc., Chicago, IL, USA) was utilized for data analysis. Frequency, percentage, mean, and standard deviation criteria were used in descriptive statistics to check the descriptive indicators. Cronbach's alpha was utilized for calculating the internal consistency of NICU-PBS, BDI-II, and maternal role adaptation scale. Based on the available evidence, Cronbach's alpha of 0.70 and above is considered acceptable.[16] The Intra-class Correlation Coefficient (ICC) was considered to evaluate the reliability of the re-test, which was performed 2 weeks after the test. In ICC, values less than 0.50 indicate poor reliability, values between 0.50 and 0.75 indicate moderate reliability, values between 0.75 and 0.90 indicate good reliability, and values greater than 0.90 indicate excellent reliability.[17,18] Pearson's correlation coefficient was applied to examine the convergent and divergent validity of NICU-PBS. Correlation values of 0.40 and higher were considered satisfactory to interpret the correlation coefficient. To interpret the correlation coefficient, correlation values of 0.40 and higher were considered satisfactory. Correlation coefficients in the ranges of 0.81-1, 0.61-0.80, 0.41-0.60, 0.21-0.40, and 0-0.20 are believed to be very strong, strong, moderate, low, and negligible, respectively.[19] Also, the Pearson correlation coefficient was used to survey how each item related to the total NICU-PBS score. If the correlation of an item with the total score was less than 0.30, it needed to be removed.[20,21]

The present study used Amos-20 statistics software (IBM Corp., Armonk, NY, USA) to evaluate the construct validity of the NICU-PBS using CFA. In CFA, the amounts indicate $\chi^2/df \leq 2$ a good fit, $0 \leq RMSEA \leq 0.05$ a good fit, $0.90 \leq GFI < 0.95$ an acceptable fit, and $0.85 \leq AGFI < 0.90$ an acceptable fit.[22] Also, the amount of $0.90 \leq CFI < 0.95$ indicates an acceptable fit.[23,24]

Ethical considerations

Written permission was obtained from its original developer to translate and examine the psychometric properties of the NICU-PBS. All procedures followed were following the ethical standards of the responsible committee on human experimentation (institutional and national) and with the Helsinki Declaration of 1975, as revised in 2000. In the present study, participants were provided with information concerning the study's objectives. They were then asked to confirm informed consent and complete the questionnaires. This study was approved by the Ethics Committee of Kermanshah University of Medical Sciences (IR.KUMS.REC.1399.515).

Results

Descriptive results

The data attributed to 291 individuals consisting of 97 fathers (33.33%) and 194 mothers (66.67%) were analyzed with the following mean (SD) of age: fathers 34.52 (6.96) and mothers 29.63 (6.30). Table 1 presents the frequency and percent of information demographic data of the participants. Table 2 presents the internal consistency of the results of the NICU-PBS items using Cronbach's alpha method.

As presented in Table 2, the means of the items NICU-PBS for the Iranian parents range between 3.29 and 3.84. Also, the standard deviations of the items NICU-PBS for the Iranian parents range between 0.88 and 1.08. However, the corrected and multiple correlations of the items NICU-PBS vary between 0.36 and 0.57 and between 0.18 and 0.47 in order. Furthermore, removing none of the items could increase the total internal consistency of NICU-PBS. The total Cronbach's alpha of NICU-PBS equals 0.85, indicating a good and acceptable alpha. Cronbach's alphas for the sub-scale confidence in the role of parents, parent–child interaction, and parents' knowledge of NICU were obtained as 0.77, 0.76, and 0.73, respectively.

The results of ICC test–re-test on 56 participants after 2 weeks revealed that for total NICU-PBS (ICC = 0.83, 95% CI = 0.72-0.90, $p < 0.001$), sub-scale confidence

Table 1: Frequency and percent of demographic information

Variable	*n* (%)
Education	
Secondary school diploma	78 (26.80)
High school diploma	96 (32.98)
Associate's degree	39 (13.40)
Bachelor's degree	56 (19.24)
Master's degree and higher	22 (7.56)
Socio-economic status	
Low	89 (30.54)
Middle	187 (64.26)
High	15 (5.15)
Type of hospital	
Government	252 (86.60)
Private	39 (13.40)
Hospitalization length	
1-10 days	169 (58.07)
11-20 days	84 (28.86)
21-30 days	17 (5.84)
Over 30 days	21 (7.21)
Residence (province)	
Kermanshah	137 (47.08)
Shiraz	154 (52.92)

Table 2: Internal consistency of Neonatal Intensive Care Unit Parental Belief Scale (NICU-PBS) items by Cronbach's alpha method

NICU-PBS* items	Descriptive indexes	Internal consistency indexes		
	Mean (SD)**	ITC***	R^2****	CID*****
1. I know what characteristics and behaviors are common in premature babies hospitalized in the NICU.	3.46 (0.90)	0.40	0.35	0.85
2. I am sure that what I do for my baby will be what is best to assist him/her in dealing with being in the NICU.	3.81 (0.92)	0.43	0.26	0.85
3. I feel comfortable caring for my baby in the NICU	3.54 (1.07)	0.39	0.27	0.85
4. I know what characteristics and behaviors to expect in my baby while he/she is in the NICU	3.33 (0.94)	0.48	0.47	0.84
5. I am sure about what things I can do to best assist my baby in getting through the NICU experience	3.65 (1.08)	0.49	0.36	0.84
6. I am sure that I can meet my baby's emotional needs while he/she is in the NICU.	3.49 (1.06)	0.53	0.38	0.84
7. I know why my baby has the characteristics and behaviors that he/she does in the NICU.	3.29 (0.98)	0.40	0.39	0.85
8. I feel confident in telling the nurses and doctors what will best assist my baby while he/she is in the NICU.	3.66 (0.93)	0.57	0.44	0.84
9. I am clear concerning how to assist in taking care of my baby in the NICU.	3.56 (0.93)	0.49	0.34	0.84
10. I know how my baby will probably respond to me while he/she is in the NICU.	3.32 (0.88)	0.41	0.23	0.85
11. I am sure concerning how my emotions will affect my baby while he/she is in the hospital	3.59 (0.94)	0.47	0.35	0.84
12. I am clear concerning how my baby will react when he/she is getting too much stimulation in the NICU	3.43 (0.92)	0.36	0.18	0.85
13. I am sure about the things that I can do to make my baby feel most secure while he/she is in the NICU.	3.50 (0.97)	0.54	0.35	0.84
14. I know how my baby's appearance and behaviors vary from a full-term baby's.	3.59 (0.93)	0.43	0.25	0.85
15. I know the best times to communicate with or interact with my baby.	3.45 (0.89)	0.48	0.38	0.84
16. I am confident in asking the doctors and nurses questions concerning my baby's medical condition.	3.84 (0.91)	0.37	0.19	0.85
17. I know what my baby will do when he/she is stressed.	3.36 (1.02)	0.44	0.33	0.85
18. I am clear concerning what my baby will look or act like when he/she is ready to communicate with me.	3.52 (0.99)	0.49	0.41	0.84

Note. *Neonatal Intensive Care Unit Parental Belief Scale; **Mean (Standard Deviation); ***Corrected item-total Correlation; ****Squared Multiple Correlation; *****Cronbach's Alpha if the item is deleted

in the parental role (ICC = 0.66, 95% CI = 0.42-0.80, $p < 0.001$), sub-scale parent–child interaction (ICC = 0.67, 95% CI = 0.43-0.80, $p < 0.001$), and sub-scale parental knowledge of the NICU (ICC = 0.57, 95% CI = 0.26-0.75, $p = 0.001$) were obtained.

Construct validity

In the present study, CFA was used to evaluate the validity of the NICU-PBS construct. The NICU-PBS three-factor model (confidence in the parental role, parent–child interaction, parental knowledge of the NICU) index values included (χ^2/df = 1.79; p = <0.001; GFI = 0.91; AGFI = 0.89; CFI = 0.91; RMSEA = 0.05). Therefore, the fit indices are acceptable for the NICU-PBS three-factor model (confidence in the parental role, parent–child interaction, and parental knowledge of the NICU). Figure 1 shows the NICU-PBS three-factor model in Iranian parents.

Divergent and convergent validity

Table 3 presents the descriptive indices and convergent and divergent validity results of NICU-PBS with BDI-II and material role adaptation.

As shown in Table 3, NICU-PBS with BDI-II (r = -0.42) has divergent validity and material role adaptation (r = 0.46) has moderate and acceptable convergence validity ($p < 0.01$). In addition, according to the Pearson correlation coefficient test results, each NICU-PBS item had an acceptable correlation with the total NICU-PBS (r = 0.44-0.63, $p < 0.001$). Therefore, the correlation of all items with the total score was higher than 0.30, and none were deleted. Also, based on the Pearson correlation results, there was a significant correlation between the sub-scale of confidence in the parental role and the sub-scales of parent–child interaction (r = 0.55, $p < 0.001$) and parental knowledge of the NICU (r = 0.39, $p < 0.001$), and between the sub-scale of parent–child interaction and the sub-scale of parental knowledge of the NICU (r = 0.38, $p < 0.001$). In addition, based on the Pearson correlation results, there was a significant relationship between the NICU-PBS total score and the sub-scales of confidence in the parental role (r = 0.86, $p < 0.001$), parent–child interaction (r = 0.86, $p < 0.001$), and parental knowledge of the NICU (r = 0.63, $p < 0.001$).

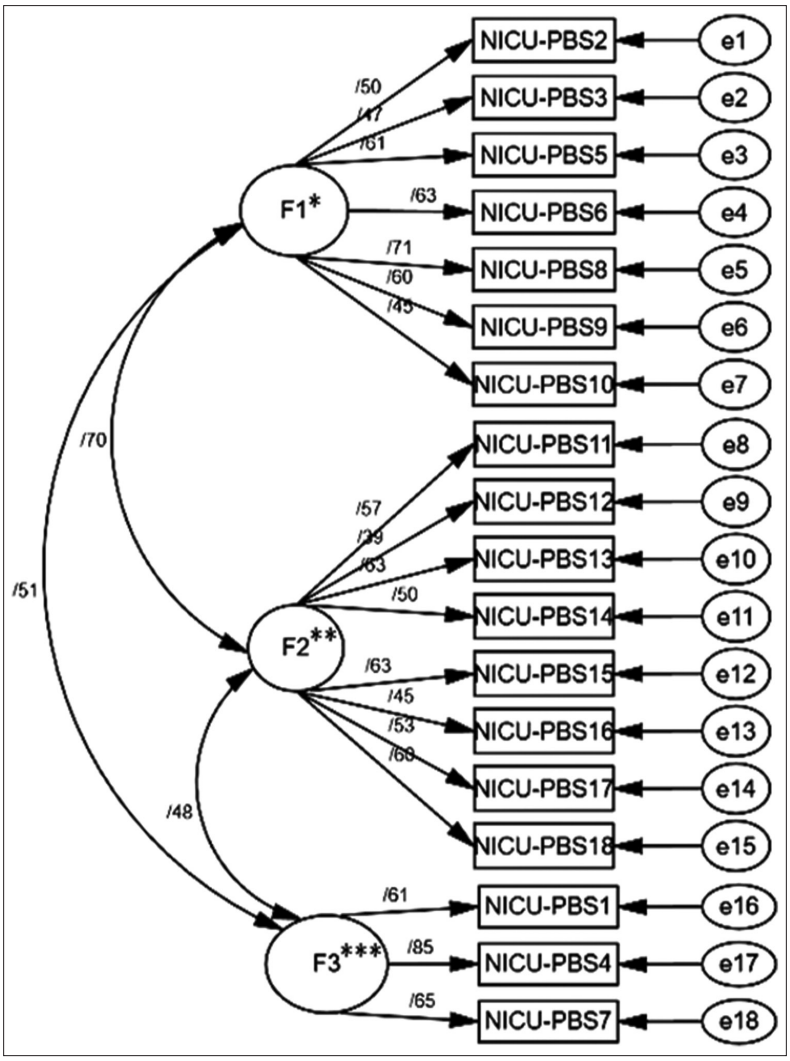

Figure 1: The NICU-PBS three-factor model in Iranian parents. Note. *Confidence in the parental role; **Parent–-child interaction; ***Parental knowledge of the NICU

Table 3: The descriptive indices and convergent and divergent validity results of Neonatal Intensive Care Unit Parental Belief Scale (NICU-PBS) with Beck Depression Inventory (BDI-II) and Material role adaptation

Variable	Descriptive indices	Convergent and divergent validity					
	Mean (SD)*	1	2	3	4	5	6
NICU-PBS							
1. Confidence in the parental role	25.03 (4.46)	1					
2. Parent-child interaction	28.28 (4.65)	0.55**	1				
3. Parental knowledge of the NICU	10.08 (2.28)	0.39**	0.38**	1			
4. Total	63.39 (9.26)	0.85**	0.86**	0.63**	1		
5. BDI-II	12.19 (6.65)	-0.42**	-0.32**	-0.23**	-0.42**	1	
6. Material role adaptation	130.08 (11.72)	0.46**	0.48**	0.33**	0.53**	-0.48**	1

*Mean (Standard deviation); **p<0.01

Discussion

This research aims to determine the translation and psychometric properties of the Persian version of NICU-PBS in Iranian parents. According to the Cronbach's alpha in the present study, the internal consistency (reliability) for the total score and NICU-PBS sub-scales was good and acceptable. Furthermore, removing any of the NICU-PBS items could not lead to an increase in total alpha. The results of the present study on the internal consistency (reliability) of NICU-PBS using Cronbach's alpha are in concordance with the results research of Melnyk *et al*.,[8] Piva *et al*.,[10] and Kardas Özdemir and Küçük Alemdar.[3] Also, in the

present study, internal consistency using ICC for the total NICU-PBS indicated good reliability, which was consistent with the results of Piva *et al*. study.[10] In addition, internal consistency using ICC for the sub-scales NICU-PBS indicated moderate reliability.

Also, the confirmed factors of this research are consistent (confidence in the parental role, parent–child interaction, and parental knowledge of the NICU) with the models in the original,[8] Brazilian,[10] and Turkish[3] versions. Based on the results, it was found that the NICU-PBS has acceptable construct validity in Iranian parents. However, items 2, 11, and 14 had been eliminated in the Brazilian version.[10]

The findings indicate the validity of the NICU-PBS divergence. Hence, these results on the divergent validity of the NICU-PBS are consistent with research.[8] Also, the results indicate the convergent validity of NICU-PBS. According to our knowledge, in three previous studies, the convergent validity of this scale with mother's role adjustment was not investigated. However,[8] research has shown that this scale is correlated with employed mothers. Also, based on the results, there were significant relationships between the total score and the NICU-PBS sub-scales and the NICU-PBS sub-scales with each other. These results were consistent with the research results of Kardas Özdemir and Küçük Alemdar.[3]

Therefore, it can be said that previous education and the culture of societies affect the parents' beliefs about the role of parents, the interaction of the parents and child, and the level of knowledge of the parents about the post-birth events (such as the hospitalization of the baby in NICU). Also, stressful events after childbirth can affect the self-regulation and self-efficacy of parents and parent–child interaction. In this regard, the evaluation of parents' beliefs about NICU can be considered a targeted evaluation to carry out the necessary interventions. Based on previous evidence, if parents' negative beliefs about NICU are not intervened, they can lead to increased stress, depression, and anxiety.

Studies have shown that use of the NICU-PBS by parents whose infants are hospitalized in the NICU is well-reliable. Furthermore, it can be a suitable tool to identify parents at risk of psychological symptoms such as anxiety and depression. Lower NICU-PBS scores were shown to be associated with more severe depression and vice versa. Parents who hold irrational and unrealistic beliefs concerning their parental roles and children's development are more vulnerable to stress and depression.[25] In addition, the levels of self-confidence in parents are inversely correlated with stress,[4] depression,[26] and anxiety.[9,27,28] Thus, being a quick, cost-efficient scale, NICU-PBS can be performed to identify the parents at risk so that they are provided with the required education, care, psychological services, and nursing interventions in symptom control.[8]

There were some limitations to this investigation: The research was carried out during the outbreak of the COVID-19 pandemic, which made it impossible to accurately assess the parents' psychiatric history. For this reason, it is suggested that parental psychiatric history be considered in future research. Moreover, considering the stressful experience of keeping their baby in NICUs, many parents were not prepared for any cooperation. As a result, the number of participants became more limited. For this reason, it is recommended to use support and intervention programs to improve the psychological condition of parents of pre-mature infants and to accept stressful situations. Also, the present study did not examine the effect of demographic and cultural variables on NICU-PBS, so it is suggested to consider the effect of these variables in future research to increase the power of generalization.

Conclusion

According to this study, NICU-PBS has acceptable internal stability (reliability), construct validity, divergence validity, and convergence validity in Iranian parents. This means that the NICU-PBS is valid and trusted for identifying vulnerable parents and laying the ground for the design of forthcoming therapeutic programs, education, psychological services, and interventions to improve their mental health. Thus, applying this scale for screening in NICUs is suggested.

Acknowledgements

The authors of this article would like to express their sincere appreciation to the Vice Chancellor for Research and Technology of Kermanshah University of Medical Sciences, and Shiraz University of Medical Sciences. Also, the authors are extremely grateful to the parents who cooperated in this research. This article is taken from the approved plan of Kermanshah University of Medical Sciences with ID "990494".

Financial support and sponsorship

Kermanshah University of Medical Sciences, Kermanshah, Iran

Conflicts of interest

Nothing to declare.

References

1. World Health Organization. Counting and accounting for preterm births. Born Too Soon: Decade of Action on Preterm Birth. World Health Organization; Geneve, Switzerland, 2023:p. 11-27.
2. Reihani T, Sekhavat Poor Z, Heidarzadeh M, Mosavi SM, Mazlom SR. The effect of spiritual self-care training on feeling of comfort in mothers of hospitalized preterm infants. J Midwifery Reprod Health 2014;2:112-9.
3. Kardas Özdemir F, Küçük Alemdar D. Validity and reliability of the NICU parental beliefs scale for parents in Turkey. J Acta Clin Croat 2019;58:303-10.

4. Liu CC, Chen YC, Yeh YP, Hsieh YS. Effects of maternal confidence and competence on maternal parenting stress in newborn care. J Adv Nur 2012;68:908-18.
5. Board R, Ryan-Wenger N. Long-term effects of pediatric intensive care unit hospitalization on families with young children. J Heart Lung 2002;31:53-66.
6. Cleveland LM. Parenting in the neonatal intensive care unit. J Obstet Gynecol Neonatal Nurs 2008;37:666-91.
7. Obeidat HM, Bond EA, Callister LC. The parental experience of having an infant in the newborn intensive care unit. J Perinat Educ 2009;18:23-9.
8. Melnyk B, Oswalt KL, Sidora-Arcoleo K. Validation and psychometric properties of the neonatal intensive care unit parental belief scale. J Nurs Res 2014;63:105.
9. Melnyk BM, Crean HF, Feinstein NF, Fairbanks E. Maternal anxiety and depression after a premature infant's discharge from the neonatal intensive care unit: Explanatory effects of the creating opportunities for parent empowerment program. J Nurs Res 2008;57:383-94.
10. Piva E, Gonçalves de Oliveira Toso BR, Carvalho ARdS, Silveira Viera C, Bittencourt Guimarães AT. Validation and categorization of the Parental Belief Scale of pre-term newborn babies. Acta Colomb Psicol 2018;21:139-48.
11. Beaton DE, Bombardier C, Guillemin F, Ferraz MB. Guidelines for the process of cross-cultural adaptation of self-report measures. Spine 2000;25:3186-91.
12. Beck AT, Steer RA, Brown GK. Beck depression inventory (BDI-II). 1996;78:490-8.
13. Ghassemzadeh H, Mojtabai R, Karamghadiri N, Ebrahimkhani N. Psychometric properties of a Persian-language version of the Beck Depression Inventory-second edition: BDI-II-PERSIAN. Depress Anxiety 2005;21:185-92.
14. Hooman F, Mehrabizadeh Honarmand M, Zargar Y, Davodi I. The effectiveness of transdiagnostic therapy on anxiety, depression, cognitive strategies of emotional regulation, and general performance in women with comorbid anxiety and depression. J Fasa Univ Med Sci 2016;5:551-63.
15. Heydarpour S, Keshavarz Z, Bakhtiari M, Zayeri F. Developing and measuring psychometric properties of "maternal role adaptation instrument in mothers of preterm infants admitted to the neonatal intensive care unit. J Clin Res Paramed Sci 2016;5:187-97.
16. Leech NL, Barrett KC, Morgan GA. SPSS for Intermediate Statistics: Use and Interpretation. Psychology Press; London, England, United Kingdom, 2005.
17. Portney LG, Watkins MP. Foundations of Clinical Research: Applications to Practice. Upper Saddle River, NJ: Pearson/ Prentice Hall; 2009.
18. Koo TK, Li MY. A guideline of selecting and reporting intraclass correlation coefficients for reliability research. J Chirop Med 2016;15:155-63.
19. Montazeri A, Vahdaninia M, Mousavi SJ, Omidvari S. The Iranian version of 12-item Short Form Health Survey (SF-12): Factor structure, internal consistency and construct validity. BMC Public Health 2009;9:1-10. doi: 10.1186/1471-2458-9-341.
20. Henrysson S. Correction of item-total correlations in item analysis. Psychometrika 1963;28:211-8.
21. Churchill GA Jr. A paradigm for developing better measures of marketing constructs. J Mark Res 1979;16:64-73.
22. Schermelleh-Engel K, Moosbrugger H, Müller H. Evaluating the fit of structural equation models: Tests of significance and descriptive goodness-of-fit measures. Methods Psychol Res Online 2003;8:23-74.
23. Wardlaw JM, Allerhand M, Doubal FN, Hernandez MV, Morris Z, Gow AJ, *et al*. Vascular risk factors, large-artery atheroma, and brain white matter hyperintensities. Neurology 2014;82:1331-8.
24. Saito M, Hiramoto I, Yano M, Watanabe A, Kodama H. Influence of self-efficacy on cancer-related fatigue and health-related quality of life in young survivors of childhood cancer. Int J Environ Res Public Health 2022;19:1467. doi: 10.3390/ ijerph19031467.
25. Bornstein MH, Cote LR, Haynes OM, Hahn C-S, Park Y. Parenting knowledge: Experiential and sociodemographic factors in European American mothers of young children. Dev Psychol 2010;46:1677-93.
26. Leahy-Warren P, McCarthy G, Corcoran P. First-time mothers: Social support, maternal parental self-efficacy and postnatal depression. J Clin Nurs 2012;21:388-97.
27. Valizadeh L, Zamanzadeh V, Akbarbegloo M, Sayadi L. Importance and availability of nursing support for mothers in NICU: A comparison of opinions of Iranian mothers and nurses. Iran J Pediatr 2012;22:191-6.
28. Reck C, Noe D, Gerstenlauer J, Stehle E. Effects of postpartum anxiety disorders and depression on maternal self-confidence. Infant Behav Dev 2012;35:264-72.