Journal of Pediatric Nursing xxx (xxxx) xxx

Contents lists available at ScienceDirect

Journal of Pediatric Nursing

journal homepage: www.pediatricnursing.org

Translation, adaptation and psychometric validation of the Indonesian version of the Readiness for Hospital Discharge Scale for parents of low birth weight infants

Suni Hariati, MN [a,b,*], Lisa McKenna, Professor [c], Lely Lusmilasari, MSi, PhD. [d], Sonia Reisenhofer, Dr. [e], Retno Sutomo, MD., Ph.D [f], Andi Dwi Bahagia Febriani, MD, Ph.D. [h], Dian Sidik Arsyad, SKM, MKM [g]

[a] Pediatric Nursing Department, Faculty of Nursing, Hasanuddin University, Jl. Perintis Kemerdekaan KM 10, Tamalanrea, Makassar 90245, Indonesia
[b] Faculty of Medicine, Health Sciences and Nursing, Gadjah Mada University, Jl. Bulaksumur, Caturtunggal, Kec. Depok, Kabupaten Sleman, Yogyakarta 55281, Indonesia
[c] Nursing and Midwifery, George Singer Building room 324A, College of Science Health and Engineering, La Trobe University, Bundoora, VIC 3086, Australia
[d] Pediatric Nursing Department, Faculty of Medicine, Health Sciences and Nursing, Gadjah Mada University, Jl. Bulaksumur, Caturtunggal, Kec. Depok, Kabupaten Sleman, Yogyakarta 55281, Indonesia
[e] Academic Coordinator (Academic Partnerships), College of Science, Health & Engineering, Director of International, School of Nursing and Midwifery, La Trobe University, Bundoora 3086, Australia
[f] Pediatric Department, Faculty of Medicine, Health Sciences and Nursing, Gadjah Mada University, Jl. Bulaksumur, Caturtunggal, Kec. Depok, Kabupaten Sleman, Yogyakarta 55281, Indonesia
[g] Department of Epidemiology, Faculty of Public Health, Hasanuddin University, Jl. Perintis Kemerdekaan KM 10, Tamalanrea, Makassar 90245, Indonesia
[h] Pediatric Departement, Faculty of Medicine, Hasanuddin University, Jl. Perintis Kemerdekaan KM 10, Tamalanrea, Makassar 90245, Indonesia

ARTICLE INFO

Article history:
Received 6 December 2019
Revised 16 May 2020
Accepted 17 May 2020
Available online xxxx

Keywords:
RHDS-parent form
Parental readiness
Psychometric testing
Cross-cultural adaptation

ABSTRACT

Purpose: Parental readiness is a requirement for discharge of the high-risk infant from the hospital. Currently, in Indonesia, there are no standard tools to measure parental readiness according to parents' perceptions. This study aimed to undertake cross-cultural adaptation and psychometric validation of the original version (English) of the Readiness for Hospital Discharge Scale (RHDS)-Parent into Bahasa Indonesia.
Design and methods: The cross-cultural adaptation was comprised of seven steps: forward translation, forward translation review, blind-back translation, back translation review, pilot testing of the pre-final version with mothers of low birth weight (LBW) infants, expert panel for conceptual and content equivalence, and initial psychometric testing. In the fifth and sixth steps, content validity index was estimated. In the seventh step, exploratory factor analysis (EFA) and internal consistency reliability were conducted. In total, 146 mothers of LBW infants were included in the psychometric testing using convenience sampling.
Results: The 22 item Bahasa-RHDS-Parent emerged in a four-factor structure evident from EFA. This version has good reliability with Cronbach alpha values for knowledge and coping ability (0.92), physical-emotional readiness (0.89), pain and power (0.83), expected support (0.80) and 0.90 across the total Bahasa-RHDS-Parent.
Conclusion: The Bahasa-RHDS-Parent presents good cross-cultural adaptation and initial psychometric properties for assessing parental readiness in parents with LBW infants before hospital discharge.
Practice implications: This questionnaire can be used by nurses to measure readiness for discharge of parents of low birthweight babies. Further testing is needed with a larger sample and parents of children of other ages and conditions for instrument improvement.

Background

Low birthweight (LBW) is defined as a weight at birth of <2500 g (5.5 lb.), regardless of gestational age (Blencowe et al., 2019; UNICEF-WHO, 2019). In 2015, 20.5 million LBW babies were born worldwide, half of these in Asia (UNICEF, 2019). Two-thirds of LBW babies are preterm and Indonesia is ranked five out of ten countries with the highest preterm birth rates in the world (WHO, 2018a). LBW is the leading cause of mortality in Indonesian children under the age of five years (Blencowe et al., 2019). Besides mortality, consequences of LBW include

* Corresponding author at: Pediatric Nursing Department, Faculty of Nursing, Hasanuddin University, Jl. Perintis Kemerdekaan KM 10, Tamalanrea, Makassar 90245, Indonesia.
E-mail addresses: sunihariati@unhas.ac.id (S. Hariati), l.mckenna@latrobe.edu.au,
URL: http://www.latrobe.edu.au/school-nursing-and-midwifery (L. McKenna),
Lely_psik@ugm.ac.id (L. Lusmilasari), S.Reisenhofer@latrobe.edu.au,
URL: http://www.latrobe.edu.au/nursing (S. Reisenhofer), rsutomo@ugm.ac.id
(R. Sutomo), sidik@unhas.ac.id (D.S. Arsyad).

https://doi.org/10.1016/j.pedn.2020.05.010
0882-5963/

morbidities in the first month of life including hypothermia, hypoglycemia, hyperbilirubinemia, necrotizing enterocolitis, and respiratory distress syndrome, while many preterm infants have lower Apgar scores and umbilical artery acidosis (Negrato & Gomes, 2013). Additionally, LBW infants are more likely to be intubated and experience higher rates of complications during birth (Negrato & Gomes, 2013). Consequently, LBW infants often need specialized medical care and treatment in a special care nursery (SCN) or neonatal intensive care unit (NICU) (AIHW, 2019).

The admission of the LBW baby to the SCN or NICU often negatively impacts parents' emotional state (Medina et al., 2018), as birthing a small baby and associated NICU admission usually happens suddenly and differs from what parents were expecting (Hall, Kronborg, Aagaard, & Brinchmann, 2013). Parents with a LBW infant in the NICU may experience fear, anxiety, acute stress disorder (ASD) and posttraumatic stress disorder (PTSD), parenting stress, depression symptoms, impaired transition to parenthood, feeling isolated and lacking of certainty about the future condition of their baby (Granero-Molina et al., 2019; Hall et al., 2013; Nordheim, Rustøen, Solevåg, Småstuen, & Nakstad, 2018; Pisoni et al., 2019; Roque, Lasiuk, Radünz, & Hegadoren, 2017). All of these experiences may impact achievement of the parental role and parents' readiness for discharge with their infant (Perry, Hockenberry, Lowdermilk, & Wilson, 2014).

Discharge preparation during infant hospitalization is needed to facilitate smooth transition from hospital to home and focuses on parents' readiness for the transition and management of their infant (Smith, Hwang, Dukhovny, Young, & Pursley, 2013; Weiss, Lerret, Sawin, & Schiffman, 2020). Parents who are not ready to care for their LBW baby on discharge from the hospital may experience coping difficulties after discharge and possible subsequent hospital readmission (Weiss et al., 2020), family anxiety (Hall et al., 2013), or hospital discharge delay, thus lengthening the duration of hospital stay (Mohammaddoost, Mosayebi, Peyrovi, Chehrzad, & Mehran, 2016). Parental discharge preparation is often performed by hospital-based clinical nurses or midwives, as they focus on preparing families and care delivery systems for discharge and post-discharge needs (Weiss et al., 2015, 2020). The nurse or midwife needs to assess parental readiness for transition from hospital to home (Weiss et al., 2020), as this readiness is a key criterion for hospital discharge of LBW infants (Committee on Fetus and Newborn, 2008; Jefferies, 2014).

Assessment of parental readiness is important in ensuring that parents can provide required infant care independently and confidently (Quinn, Sparks, & Gephart, 2017). There is a need for available and reliable tools to assist clinical nurses and midwives in finalizing discharge preparation (Weiss et al., 2008, 2020). Several instruments have been developed to assess parental readiness for hospital discharge, however most of these are in the English language, subjective in nature and thus do not provide an objective assessment (Chen & Bai, 2017). Furthermore, there are often very different perceptions of parental readiness for discharge between families or parents and healthcare providers. Healthcare clinicians reportedly rate parental discharge readiness lower than parents' own ratings (Smith, Young, Pursley, McCormick, & Zupancic, 2009). Hence, tools to assess parents' readiness to care for their LBW infant at home, based on their perceptions, are needed.

The Readiness for Hospital Discharge Scale (RHDS)-Parent is one of few instruments based on parents' perceptions that has been developed to measure parents' readiness to manage the care of the infant upon discharge from the hospital (Chen & Bai, 2017; Weiss et al., 2008, 2020). The tool reportedly possesses good psychometric properties when the English version is used (Chen & Bai, 2017; Weiss et al., 2020). It has 29 items consisting of five subscales including child's personal status, parents' personal status, knowledge, coping abilities and expected support (Weiss et al., 2008, 2020). To date, this scale has been widely used in English speaking countries (Weiss et al., 2008, 2020) and there is a validated Chinese version that assesses parental readiness for premature infant discharge across different cultures and genders (Chen & Bai, 2017). It is suggested that the diversity of the population worldwide requires cross-culturally validated scales that allow researchers and clinicians to access valid and reliable instruments previously used in other cultures and languages (Sousa & Rojjanasrirat, 2011). The aim of this study was to translate, cross-culturally adapt, and conduct initial psychometric testing of the RHDS-Parent Form with parents of LBW infants in Indonesia.

Methods

Design

Advanced planning and well established methodological approaches must be used to ensure clear processes of translation, adaptation, and psychometric validation of the RHDS-Parent for use in other cultures and language, including Indonesia (Sousa & Rojjanasrirat, 2011). This study was conducted with translation (forward and blind-back translation), adaptation and validation of the instrument developed for use in cross-cultural health care research, as advised by Sousa and Rojjanasrirat (2011) and the World Health Organization (WHO) (2018b) recommendation for translation and adaptation of tools. A cross-sectional design was used to conduct the psychometric validation.

Participants and setting

This study was carried out with participants from neonatal wards of seven hospitals in Makassar, Indonesia (five public hospitals and two mother's and children's hospitals). There were 54 NICU beds in the five public hospitals (A = 22; B = 4; C = 11; D = 10, E = 7) and 29 NICU beds between the two mother's and children's hospitals (A = 15; B = 14). Mothers of hospitalized LBW infants were enrolled in the study using convenience sampling. Eligible mothers were recruited if they were at least 18 years old, primary caregivers of LBW infants at home after hospital discharge and had completed elementary school. They were excluded if their infants were readmitted or referred from another hospital. The minimum sample size was calculated on having at least five participants for each item in the instrument, as recommended for enhancing the psychometric quality of exploratory factor analysis by Gorsuch (2015) and Hair, Black, Babin, and Anderson (2013). Therefore, a sample size of 145 was sought and a total of 146 mothers participated.

Instruments

The RHDS-Parent Form was developed by Weiss et al. (2008) to capture parents' perceptions of readiness to manage the care of their hospitalized child (0–18 years old) on the day of hospital discharge (Chen & Bai, 2017; Weiss et al., 2008, 2020). As mentioned earlier, the English version of this form contains 29 items in five subscales or factors: parents' personal status, child personal status, knowledge, coping ability, and expected support. Parents' personal status includes eight items related to their physical and emotional perceptions before discharge. Child personal status consists of five items incorporating the parents' perceptions of their own personal status and the child's status today. Knowledge, in nine items, refers to key content in caring for their child at home. Coping ability, in three items, represents parents' abilities to handle the situation at home. Expected support, in four items, illustrates the support from others that parents receive at home. The instrument uses an 11-point scale option with scores ranging from 0 (not at all, none) to 10 (totally or great deal). The final total score of RHDS ranges from 0 (minimum) to 290 (maximum). The higher the score, the greater the parent's readiness for hospital discharge of their infant.

The English RHDS demonstrated good reliability, both on total scale with Cronbach's α score 0.85, and on subscale alpha values ranging between 0.70 and 0.86 (Weiss et al., 2008). The reliability of RHDS has been reported in four previous studies (conducted in English with English speaking populations) with alpha values ranging between 0.83

Please cite this article as: S. Hariati, L. McKenna, L. Lusmilasari, et al., Translation, adaptation and psychometric validation of the Indonesian version of the Readiness for H..., Journal of Pediatric Nursing, https://doi.org/10.1016/j.pedn.2020.05.010

and 0.92 for total score (Weiss et al., 2020). Construct validity using confirmatory factor analysis (CFA) has been previously established for the 21-item RHDS, used to measurement readiness of hospital discharge for adults, postpartum women and parents (Weiss & Piacentine, 2006). The cross-cultural adaptation in China established a 29-item RHDS-Parent Form and model fit indices achieved on 22-item C-RHDS-Parent Form with RMSEA 0.078, SRMR 0.066, CFI 0.91 and TLI 0.90 (Chen & Bai, 2017).

Translation, adaptation and validation procedure

The Bahasa Indonesia (Indonesian language) form of the RHDS-Parent was adapted from the original English 29-item scale with five subscales using the cross-cultural adaptation and translation method described by Sousa and Rojjanasrirat (2010). Permission was obtained from the original author via e-mail. We performed this adaptation in seven steps: forward translation, forward translation review, blind-back translation, back translation review, pilot testing (face validity), expert panel (content validity), initial psychometric testing (construct validity) (see Fig. 1).

Step 1: forward translation

Forward translation of the original RHDS into Bahasa Indonesia was independently performed by three translators (TL1; TL2; & TL3) including two certified translators knowledgeable about cultural and linguistic aspects and one translator who is a health professional knowledgeable about health terminology and nursing. All translators were bilingual (English and Bahasa Indonesia) with Bahasa Indonesia as their primary language. This process produced three forward translations.

Step 2: forward translation review

The first author developed a committee approach to achieve consensus that generated a complete forward-translated version of the preliminary initial translated version of the instrument in the Bahasa Indonesia version. The panel consisted of five members including one independent translator (TL4) who was different than in Step 1, two research team members, one maternal and child health expert and one expert with experience in instrument development. In this step, panel members discussed ambiguities and discrepancies in the forward-translation and compared these with the original version of the RHDS-

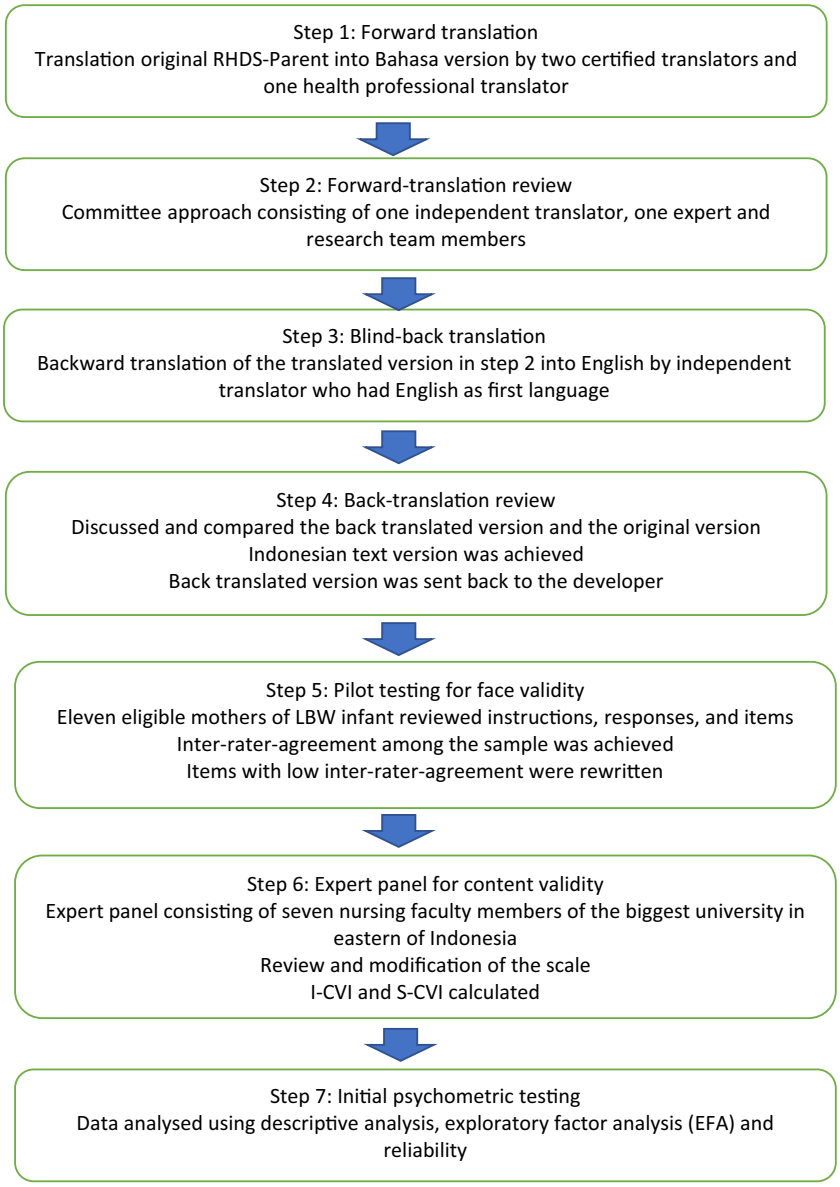

Fig. 1. Translation, adaptation and validation steps.

Please cite this article as: S. Hariati, L. McKenna, L. Lusmilasari, et al., Translation, adaptation and psychometric validation of the Indonesian version of the Readiness for H..., Journal of Pediatric Nursing, https://doi.org/10.1016/j.pedn.2020.05.010

Parent. Finally, they derived a version of the RHDS-Parent that took the Indonesian culture into consideration.

Step 3: blind back-translation

The blind back-translation was conducted by an independent translator (TL5) who had English as a first language and no knowledge of the RHDS-Parent Form. In this step, the preliminary translated version of the RHDS-Parent from Step 2 was translated again into an English version to produce a back-translated version.

Step 4: back-translation review

The back-translated version of the RHDS-Parent was discussed and compared with the original version and the forward translation by two bilingual experts in nursing and research team members. Discrepancies and differences between the back-translated version and original version were discussed, including the influence of Indonesian culture and modified until a final and mutually agreed Indonesian text version of the RHDS-Parent was achieved. This step produced a pre-final version of the RHDS-Parent. In addition, the back-translated version was sent back to the original developer for review.

Step 5: pilot testing

Pilot testing was conducted to evaluate the instructions, response, and 29 items of the pre-final version RHDS-Parent. This step ensured face validity. Eleven eligible mothers of LBW infants from one referral hospital with the largest NICU facility in Makassar, who were not included in the study, were recruited to pilot test the tool. The inclusion criteria and sampling strategy for this component reflected the main study. Written informed consent was obtained prior to pilot testing. This group was asked to rate the instructions, two dichotomous questions and 29 items of the RHDS-Parent Form using a dichotomous scale (clear or unclear). Inter-rater-agreement among the sample indicated that the instructions were clear (91%). The inter-rater-agreement range of the 29 items was between 72% and 100%. Seven items had inter-rater agreements below 80%. These seven statements were rewritten according to comments from this group and suggestions on how to make the language in the items clearer.

Step 6: expert panel

The rewritten pre-final version was evaluated by an expert panel for content validity. Seven experts working in the largest university in eastern Indonesia and a nursing consultant in a university hospital were used for this step. They were knowledgeable experts in child nursing ($n = 2$), midwifery ($n = 3$), family nursing ($n = 1$) and psychiatric nursing ($n = 1$). The expert panel was asked to assess relevance of 29 items of the RHDS Parent-Form for content-related validity using the following scale: 1 = not relevant; 2 = unable to assess relevance; 3 = relevant but needing minor alteration; and 4 = totally relevant. The expert panel opinions were classified into two categories: disagree (scores 1 & 2) and agree (scores 3 & 4). Item-level content validity (I-CVI) and scale-level average CVI (S-CVI/Ave) were calculated (Sousa & Rojjanasrirat, 2011). I-CVI performs the expert panel agreement ratio for each item to guide for revising, deleting or substituting items with 0.78 or above as the minimum acceptable score. S-CVI/Ave was calculated by taking the sum of the I-CVIs and dividing it with the total number of items in the scale, the minimum acceptable score for S-CVI/Ave is 0.90 or above (Polit & Beck, 2006; Sousa & Rojjanasrirat, 2011). This step resulted in RHDS-Parent I-CVI between 0.71 and 1. The S-CVI/Ave was 0.92. Only one statement had an I-CVI of 0.71 and it was rewritten according to consensus of the expert panel. The rewritten pre-final version showed good agreement and was developed to a pre-final Bahasa version of the RHDS-Parent ready for initial psychometric testing.

Step 7: initial psychometric testing (construct validity and reliability)

Psychometric testing was conducted with mothers of LBW infants who were eligible and met inclusion criteria. This step consisted of descriptive analysis, construct validity and reliability. All data were analyzed using an open source program, Jamovi 1.1.7. A p-value <0.05 indicated a level of statistical significance.

A. *Descriptive Analysis*. Sociodemographic variables were summarized to describe patients' characteristics. Frequencies and percentages were used to describe categorical data, and mean, median, standard deviation (SD) and range were used to describe numeric data.
B. *Construct Validity*. The construct validity for cross-cultural validation of the 29-item RHDS-Parent Form was assessed by exploratory factor analysis (EFA) according to recommendations by Sousa and Rojjanasrirat (2010). EFA is an important step in this process because this instrument is being adapted and used for the first time on exploring the structure evident in the Indonesian sample. The Kaiser-Meyer-Olkin (KMO) and Bartlett sphericity tests were used to confirm suitability of the sample for conducting EFA. A satisfactory result was achieved with KMO value >0.80 and Bartlett sphericity <0.001. We then conducted maximum likelihood extraction with oblique rotation based on eigenvalue >1 to determine the underlying structure of the Bahasa Indonesia version of the RHDS-Parent Form (Hair et al., 2013). We used Costello and Osborne's (2005) factor analysis extraction method to find a number of meaningful factors in the data set. The criteria for factor extraction and item deletion factor loading coefficients >0.45 and cross loading ≤0.15 for each item of instrument RHDS were used. The factor loading coefficients of 0.45 and above were chosen based on guidelines for identifying significant factor loading based on sample size (Hair et al., 2013).
C. *Reliability Assessment*. To determine internal consistency reliability estimates, Cronbach's alpha is calculated and described as excellent ($\alpha \geq 0.90$), good ($\alpha = 0.80$–0.90), acceptable $\alpha = 0.70$–0.80), questionable ($\alpha = 0.70$–0.60), poor ($\alpha = 0.60$–0.50), or unacceptable ($\alpha < 0.50$) (Bland & Altman, 1997; Tavakol & Dennick, 2011).

Data collection

Data collection was carried out between June and December 2018 by the first author and assisted by six enumerators after receiving research approvals from the seven hospitals used as recruitment sites. The six data collectors were nurses with previous research experience who worked in the hospitals accessed for the research. Data collectors were carefully trained prior to collecting data by the first author. Data were collected after mothers of LBW infants had received discharge decisions by a physician one or two days before actual hospital discharge. Mothers who met the inclusion criteria for participation were recruited and if interested were provided an explanation of the study including its objectives, processes, confidentiality and their right to withdraw at any time. Those who agreed to participate signed an informed consent form prior to completing the questionnaire.

Data collection commenced with a set of questions collecting basic demographic data about mothers and their infants. Mothers' demographic data included age, education, gravida, occupation, and type of birth. Infants' demographic data included gestational ages, birth weight, length of hospital stay and weight on hospital discharge. After completing the demographic data, mothers completed the pre-final Bahasa-RHDS-Parent Form which generally took 15–20 min.

Ethical consideration

The study was approved by the ethical review board of the Medical Faculty of Universitas Hasanuddin Indonesia and at the seven hospitals. All participants provided written informed consent prior to commencement of data collection. All questionnaires were collected anonymously by enumerators. The data are securely stored and used only for research purposes.

Please cite this article as: S. Hariati, L. McKenna, L. Lusmilasari, et al., Translation, adaptation and psychometric validation of the Indonesian version of the Readiness for H..., Journal of Pediatric Nursing, https://doi.org/10.1016/j.pedn.2020.05.010

Results

Descriptive characteristics

One hundred and forty-six mothers of LBW infants completed this study. Maternal age ranged between 18 and 44 years old and most (40.8%, $n = 62$) were young adults (25–35 years old). Their highest education backgrounds were predominately high school (41.4%, $n = 63$). Among the 146 mothers, 111 (76%) were housewives and 104 (68.4%) were primiparas. Sixty-eight of the them (46.6%) were recruited from public hospital A. Among their LBW infants, mean gestational age was 34.13 weeks and 80 (54.8%) were born by normal birth. The average birth weight was 1807.61 g and average weight on discharge was 1984.04 g. The LBW infants had a range of length of hospital stay between 3 and 61 days, with a mean of 15.86 days. The detailed results are presented in Table 1.

Construct validity

The four factors with eigenvalues >1 explained 52.79% of scale variance but were not consistent with the five factors in the 29 items original version RHDS-Parent. According to the EFA result, seven items were deleted from the original version because of the factor loading coefficients ≤ 0.45 (items 5b, 7b, 9, 10, 11, 12 and 21) and crossover loading in minimum two factors (items 5b, 7b, 9, 10, and 11). The Cronbach's α was >0.895 once these were deleted. Considering content, meaning of four factors, and original factor structure labels, we labelled factors 1 to 4 as: 'knowledge and coping ability', 'physical-emotional readiness', 'power and pain', and 'expected support'. Details of factor loadings and the Cronbach's α if items were deleted are presented in Table 2.

Reliability/internal consistency

This Bahasa-RHDS-Parent Form demonstrated good reliability with Cronbach's α values of 0.917, 0.885, 0.828, 0.800 and 0.900 for knowledge and coping ability, physical emotional readiness, power and pain, expected support and total scale respectively. These values indicate the Bahasa-RHDS-Parent Form could be used to reliably assess mothers' readiness for their LBW infants' hospital discharge in the Indonesian setting.

Discussion

Cross-cultural health research provides important clinical knowledge and care implications for health care professionals, including nurses, who must provide high quality care for their patients in different cultural contexts (Sousa & Rojjanasrirat, 2011). Quality care requires the provider to undertake detailed assessments to gain deeper understanding of the patient situation by using objective well-validated and reliable instruments that have been used in varied populations (Sousa & Rojjanasrirat, 2011). The 22-item Bahasa-RHDS-Parent Form was found to have significant validity and reliability within this study. Content validity of the instrument was ensured by a comprehensive process of cross-cultural adaptation of the instrument (Sousa & Rojjanasrirat, 2011) and adjusted to guidelines of WHO translation and instrument adaptation (WHO, 2018b). A thorough process of cross-cultural translation including bilingual forward-translation, back-translation, pilot testing, expert panel discussion and psychometric testing was conducted to achieve a conceptually equivalent Bahasa translation of the original English version of the instrument (WHO, 2018b). In the pilot testing with mothers of LBW infants and expert panel discussion, some items were revised based on comments and suggestions. This step facilitated reducing ambiguity, enabled clearer language, and reconciled the Bahasa-RHDS-Parent Form with the Indonesian culture.

The Bahasa-RHDS-Parent has some different factor structures than the original version as a result of our construct validity testing. Factor structure is based on correlations among items (Hair et al., 2013). The exploratory factor analysis revealed a four factor structures inconsistent with the five-factor structure of the original version of RHDS-Parent and the analysis grouped items in each factor structure somewhat

Table 1
Demographic characteristics ($n = 146$).

Variable	n (%)	Mean	Median	Min-Max	SD
Age (Years) of mothers		29.1	28	18–46	6.8
Late adolescent (18–24)	50 (32.9)				
Young Adult (25–35)	62 (40.8)				
Late adult (36–45)	34 (22.4)				
Education of mothers					
Elementary/intermediate school	37 (24.3)				
High school	63 (41.4)				
Diploma/Bachelor/Master	46 (30.3)				
Occupation of mothers					
Employee	35 (24.0)				
Housewife	111 (76.0)				
Parity of mothers		2.1	2.0	1–6	1.3
Primipara	104 (68.4)				
Multipara	33 (21.7)				
Grand multipara	9 (5.9)				
Place of recruitment					
Public hospital A	68 (46.6)				
Public hospital B	7 (4.8)				
Public hospital C	12 (8.2)				
Public hospital D	10 (6.8)				
Public hospital E	4 (2.7)				
Mother and child hospital A	26 (17.8)				
Mother and child hospital B	19 (13.0)				
Type of birth					
Cesarean	66 (45.2)				
Normal birth	80 (54.8)				
Gestational Age of infants (Weeks)		34.1	35.0	23–42	3.2
Birth Weight of infants (gram)		1807.6	1808.0	700–2450	445.8
Weight at discharge of infants (gram)		1984.0	2000.0	1000–2700	360.6
Length of Hospital Stay of infants (days)		15.8	14.0	59.0	11.8

Note. Min-max = minimum-maximum; SD = standard deviation.

Please cite this article as: S. Hariati, L. McKenna, L. Lusmilasari, et al., Translation, adaptation and psychometric validation of the Indonesian version of the Readiness for H..., Journal of Pediatric Nursing, https://doi.org/10.1016/j.pedn.2020.05.010

Table. 2
Factor loading and Cronbach's α if item deleted of 29 items RHDS-parent.

Items	Factor loading of EFA				Cronbach's α if item deleted
	Factor 1	Factor 2	Factor 3	Factor 4	
2a. Mother's physical readiness	0.036	**0.933**	−0.039	−0.011	0.895
2b. Child's physical readiness	0.022	**0.821**	0.070	0.040	0.894
3a. Mother's pain or discomfort	−0.006	0.017	**0.801**	−0.106	0.895
3b. Child's pain or discomfort	0.116	−0.083	**0.839**	−0.127	0.898
4a. Mother's strength	−0.077	0.092	**0.724**	0.061	0.898
4b. Child's strength	−0.048	0.009	**0.594**	0.289	0.897
5a. Mother's energy	0.108	**0.527**	0.080	−9,49	0.896
5b Child's energy[b]	0.307	0.234	0.070	0.234	0.895
6. Stress	−0.052	0.090	**0.528**	0.165	0.898
7a. Mother's emotion and/or behaviour	0.099	**0.668**	0.097	−0,30	0.895
7b. Child's emotion and/or behaviour[b]	−0.100	0.182	0.431	0.147	0.899
8a. Physical ability to care self	0.117	**0.529**	0.032	0.192	0.895
8b. Usual activities for age	**0.512**	0.256	0.011	−0.063	0.895
9. Caring for child[b]	0.341	0.153	0.044	0.275	0.895
10. Child's personal needs[b]	0.458	0.260	0.033	0.262	0.894
11. Growth and development[b]	0.446	0.188	0.106	0.173	0.894
12. Medical needs[a]	0.332	−0.136	0.055	0.096	0.923
13. Problems to watch for	**0.749**	0.039	0.036	0.067	0.893
14. Who and when to call for problem	**0.728**	0.041	0.037	−0.108	0.895
15. What allowed and not allowed to do	**0.693**	0.011	−0.016	0.198	0.894
16. What happens next	**0.876**	−0.023	−0.007	−0.162	0.894
17. Services and information in your community	**0.721**	−0.074	0.048	0.178	0.894
18. Handling the demands of life at home	**0.675**	0.248	0.052	−0.064	0.895
19. Performing personal child care	**0.622**	0.274	0.034	−0.018	0.895
20. Performing child's medical treatments	**0.667**	−0.075	−0.081	0.214	0.896
21. Emotional support[a]	0.114	0.090	0.070	0.307	0.899
22. Help with child's personal status	0.227	−0.206	0.038	**0.681**	0.898
23. Help with household activities	−0.022	0.146	−0.054	**0.746**	0.898
24. Help with child's medical care	0.017	0.154	−0.070	**0.644**	0.898

Note: a = item deleted based on factor loading ≤ 0.45, b = cross loading ≤0.15, EFA = exploratory factor analysis,The significance bold data = item that have factor loading >0.45 and cross loading >0.15.

differently to the original version. 'Expected support' was the only factor structure that remains completely the same as in the original version. Such differences could have occurred because of the Indonesian culture in which mothers always receive additional support at home from their families including husbands, siblings, parents, parents-in-law and other family members (Erfina, Widyawati, McKenna, Reisenhofer, & Ismail, 2019; Rahayuningsih, Hakimi, Haryanti, & Anganthi, 2015).

Two factors regarding knowledge and coping ability from the original version were merged into one factor in the Bahasa Indonesia version. Five items from knowledge were grouped in one new factor with three items of coping ability that we gave the name 'knowledge and coping ability'. This factor was consistent with the coping abilities factor in the original version which had three items (items 18, 19 and 20) (Weiss et al., 2008, 2020). Coping abilities in this study were grouped together with knowledge, but all items in that factor included focus on daily care of the LBW infant at home, which describes health problems that the baby faced at home, medical treatment at home, personal care at home and how mothers accessed health services. Such daily care is important for mothers before their babies are discharged home, because they usually assume responsibility for the daily care for their babies at home (Jefferies, 2014). Knowledge and coping abilities were grouped in one factor for the Bahasa Indonesia version because in Indonesian hospitals, especially in SCN and NICU, family-centered care and empowering the mother to care for her baby are implemented. Hence, Indonesian mothers are directly involved in the daily care of their babies under supervision of physicians and nurses. They are permitted to independently change diapers, cup feed, breastfeed, weigh their baby and perform kangaroo mother care (KMC) before hospital discharge. In addition, Indonesian hospitals have policies that permit parents to visit their babies at any time, and the reason why all items in coping ability were included in the Bahasa Indonesia version. This differs from the Chinese adaptation of the RHDS-Parent Form which excluded all items of the coping abilities subscale because parents are prohibited from visiting their babies in the NICU (Chen & Bai, 2017). In China, it is reported that parents usually only receive reports of the baby's condition from their children's doctors two or three times per week (Chen & Bai, 2017).

The two factors from the original version that include parents' and child's personal status were represented in two factors in the Bahasa-RHDS-Parent Form with different formation of grouped items. These factors were labelled "physical-emotional readiness" and "pain and power". Physical-emotional readiness describes how ready mothers and infants are, including physically (including energy) and emotionally. The physical readiness of the baby is described as physiological competencies that must be achieved including thermoregulation, breathing, feeding skill and weight gain (Committee on Fetus and Newborn, 2008; Jefferies, 2014). On the other hand, mothers require physical and emotional readiness because they are primary care providers for their babies at home (Jefferies, 2014; Smith et al., 2013). Pain and power were grouped as a new factor and this may be attributed to the fact that parents can visit their baby anytime, so they can see their baby's experience pain during invasive procedures in the NICU. Such pain experiences result from many procedures that mothers may not anticipate at the time of their baby's admission to hospital (Kyololo, Stevens, & Songok, 2019). Infants' pain experiences are stressful for parents and they may feel insecure about their abilities to manage their baby's pain, while at the same time they feel greater power in participating in their baby's care (Gale, Franck, Kools, & Lynch, 2004). This is similar to the Chinese adaptation of the RHDS that loaded a new scale labelled as 'pain status' (Chen & Bai, 2017).

The Bahasa-RHDS-Parent Form has the same number of items as the Chinese-RHDS-Parent with four factors and 22 items (Chen & Bai, 2017). Further, this result is consistent with the original version of the RHDS-Parent Form that has good internal consistency reliability (29 items and 23 items) (Weiss et al., 2020). Finally, this 22-item Bahasa-RHDS-Parent can be used to measure parental readiness before hospital discharge of their LBW baby in Indonesia as a structured tool that has good validity and reliability. Evaluation of the tool in other Indonesian

Please cite this article as: S. Hariati, L. McKenna, L. Lusmilasari, et al., Translation, adaptation and psychometric validation of the Indonesian version of the Readiness for H..., Journal of Pediatric Nursing, https://doi.org/10.1016/j.pedn.2020.05.010

contexts and further testing to test construct validity and reliability with a larger sample size is recommended for instrument improvement.

Practice implications

Parental readiness is one requirement for the discharge of an infant from hospital to home. Until this study, there was no standard instrument or tool that measured parental readiness for infant discharge specifically focused to the Indonesian setting. This instrument can be used in Indonesian neonatal care wards, including NICU and SCN, for measuring parental readiness through parents' perceptions before hospital discharge of their baby. The use of the Bahasa-RHDS-Parent Form may assist health professionals to identify problems that parents may face prior to hospital discharge and that may require intervention to enhance discharge planning. The instrument also can be used to improve the discharge planning education programs provided for parents.

Limitations

The most important limitation of this research was the relatively small numbers of mothers who were able to be accessed through the seven hospitals involved in the study and the geographical limitation of only one city. Hence, the factor structure should be refined in future studies with larger samples, and in other areas of Indonesia. The four factor structure evident in this study applies only to the population of parents of LBW infants and may be different for parents of other hospitalized children with different conditions and ages. Items eliminated for this adaptation may be more applicable to these other types of samples; hence this also would benefit from further testing.

Conclusion

This study enabled adapting the semantically equivalent Bahasa Indonesia version of the RHDS-Parent Form which has significant reliability and validity for use in Indonesia. The Bahasa-RHDS-Parent Form presents good psychometric properties and may be used to assess parental readiness before infant discharge from neonatal care including SCN and NICU. Subsequent research should examine the Bahasa-RHDS-Parent Form in a broader sample in Indonesia and investigate other pediatric conditions or age-based considerations.

CRediT authorship contribution statement

Suni Hariati: Conceptualization, Methodology, Investigation, Data curation, Visualization, Writing - original draft.**Lisa McKenna:**Data curation, Visualization, Writing - review & editing.**Lely Lusmilasari:** Conceptualization, Methodology, Visualization, Writing - review & editing, Data curation.**Sonia Reisenhofer:**Data curation, Visualization, Writing - review & editing.**Retno Sutomo:**Conceptualization, Methodology, Visualization, Writing - review & editing.**Andi Dwi Bahagia Febriani:**Conceptualization, Methodology, Visualization, Writing - review & editing.**Dian Sidik Arsyad:**Data curation, Visualization, Writing - original draft.

Acknowledgments

We are thankful to the mothers of the preterm babies who took part in this study.

Funding

The authors received financial support for research from The Indonesia Endowment Fund for Education (*LPDP*) (20161141040081) and for publication from the Ministry of Research and Higher Education-Indonesia via Enhance International Publication (EIP) on 2019 (T/1342/D3.2/KD.02.00/2019)

References

AIHW (2019). *Admission to a special care nursery or neonatal intensive care unit.* Australian Institute of Health and Welfare (AIHW). https://www.aihw.gov.au/reports/mothers-babies/australias-mothers-babies-data-visualisations/contents/baby-outcomes/admission-to-a-special-care-nursery-or-neonatal-intensive-care-unit.

Bland, J. M., & Altman, D. G. (1997). Statistics notes: Cronbach's alpha. *BMJ: British Medical Journal*, *314*(7080), 572. http://www.jstor.org/stable/25173851.

Blencowe, H., Krasevec, J., de Onis, M., Black, R. E., An, X., Stevens, G. A., ... Cousens, S. (2019). National, regional, and worldwide estimates of low birthweight in 2015, with trends from 2000: A systematic analysis. *The Lancet Global Health*, *7*(7), e849–e860. https://doi.org/10.1016/S2214-109X(18)30565-5.

Chen, Y., & Bai, J. (2017). Reliability and validity of the Chinese version of the readiness for hospital discharge scale–parent form in parents of preterm infants. *International Journal of Nursing Sciences*, *4*(2), 88–93. https://doi.org/10.1016/j.ijnss.2017.01.009.

Committee on Fetus and Newborn (2008). Hospital discharge of the high-risk neonate. *PEDIATRICS*, *122*(5), 1119–1126. https://doi.org/10.1542/peds.2008-2174.

Costello, A. B., & Osborne, J. W. (2005). Best practices in exploratory factor analysis : Four recommendations for getting the most from your analysis. *Practical Assesment, Research & Evaluation*, *10*(7), 1–9.

Erfina, E., Widyawati, W., McKenna, L., Reisenhofer, S., & Ismail, D. (2019). Exploring Indonesian adolescent women's healthcare needs as they transition to motherhood: A qualitative study. *Women and Birth*, *32*(6), 544–551. https://doi.org/10.1016/j.wombi.2019.02.007.

Gale, G., Franck, L. S., Kools, S., & Lynch, M. (2004). Parents' perceptions of their infant's pain experience in the NICU. *International Journal of Nursing Studies*, *41*(1), 51–58. https://doi.org/10.1016/S0020-7489(03)00096-8.

Gorsuch, R. L. (2015). *Factor analysis (classic ed).* Routledge Taylor and Francis Group.

Granero-Molina, J., Medina, I. M. F., Fernandez-Sola, C., Hernandez-Padilla, J. M., Lasserrotte, M. d. M. J., & Rodriguez, M. d. M. L. (2019). Experiences of mothers of extremely preterm infants after hospital discharge. *Journal of Pediatric Nursing*, *45*, e2–e8. https://doi.org/10.1016/j.pedn.2018.12.003.

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2013). *Multivariate data analysis* (7th ed.). Pearson Education, Inc.

Hall, E. O. C., Kronborg, H., Aagaard, H., & Brinchmann, B. S. (2013). The journey towards motherhood after a very preterm birth: Mothers' experiences in hospital and after home-coming. *Journal of Neonatal Nursing*, *19*(3), 109–113. https://doi.org/10.1016/j.jnn.2012.08.002.

Jefferies, A. L. (2014). Going home: Facilitating discharge of the preterm infant. *Paediatrics & Child Health*, *19*(1), 31–36. https://doi.org/10.1093/pch/19.1.31.

Kyololo, O. M., Stevens, B. J., & Songok, J. (2019). Mothers' perceptions about pain in hospitalized newborn infants in Kenya. *Journal of Pediatric Nursing*, *47*, 51–57. https://doi.org/10.1016/j.pedn.2019.04.015.

Medina, I. M. F., Granero-Molina, J., Fernández-Sola, C., Hernández-Padilla, J. M., Avila, M. C., & Rodriguez, M. D. M. L. (2018). Bonding in neonatal intensive care units: Experiences of extremely preterm infants' mothers. *Women and Birth*, *31*(4), 325–330. https://doi.org/10.1016/j.wombi.2017.11.008.

Mohammaddoost, F., Mosayebi, Z., Peyrovi, H., Chehrzad, M. -M., & Mehran, A. (2016). The effect of mothers' empowerment program on premature infants' weight gain and duration of hospitalization. *Iranian Journal of Nursing and Midwifery Research*, *21*(4), 357. https://doi.org/10.4103/1735-9066.185572.

Negrato, C. A., & Gomes, M. B. (2013). Low birth weight: Causes and consequences. *Diabetology and Metabolic Syndrome*, *5*(1), 1–8. https://doi.org/10.1186/1758-5996-5-49.

Nordheim, T., Rustøen, T., Solevåg, A. L., Småstuen, M. C., & Nakstad, B. (2018). Hope in parents of very-low birth weight infants and its association with parenting stress and quality of life. *Journal of Pediatric Nursing*, *38*, e53–e58. https://doi.org/10.1016/j.pedn.2017.10.006.

Perry, S. E., Hockenberry, M. J., Lowdermilk, D. L., & Wilson, D. (2014). *Maternal child nursing care* (5th ed.). Mosby Inc., Elsevier. http://evolve.elsevier.com/Perry/maternal.

Pisoni, C., Spairani, S., Manzoni, F., Ariaudo, G., Naboni, C., Moncecchi, M., ... Orcesi, S. (2019). Depressive symptoms and maternal psychological distress during early infancy: A pilot study in preterm as compared with term mother–infant dyads. *Journal of Affective Disorders*, *257*(April), 470–476. https://doi.org/10.1016/j.jad.2019.07.039.

Polit, D. F., & Beck, C. T. (2006). The content validity index: Are you sure you know What's being reported? Critique and recommendations. *ResearchinNursing&Health*, *29*, 489–497. https://doi.org/10.1002/nur.

Quinn, J. M., Sparks, M., & Gephart, S. M. (2017). Discharge criteria for the late preterm infant. *Advances in Neonatal Care*, *17*(5), 362–371. https://doi.org/10.1097/ANC.0000000000000406.

Rahayuningsih, F. B., Hakimi, M., Haryanti, F., & Anganthi, N. R. N. (2015). Social support and postpartum quality of life during the postpartum period. *Journal of Health Journal Medicine and Nursing*, *15*(2011), 88–93. http://iiste.org/Journals/index.php/JHMN/article/viewFile/24457/25033.

Roque, A. T. F., Lasiuk, G. C., Radünz, V., & Hegadoren, K. (2017). Scoping review of the mental health of parents of infants in the NICU. *Journal of Obstetric, Gynecologic, and Neonatal Nursing*, *46*(4), 576–587. https://doi.org/10.1016/j.jogn.2017.02.005.

Smith, V. C., Hwang, S. S., Dukhovny, D., Young, S., & Pursley, D. M. (2013). Neonatal intensive care unit discharge preparation, family readiness and infant outcomes: Connecting the dots. *Journal of Perinatology*, *33*(6), 415–421. https://doi.org/10.1038/jp.2013.23.

Smith, V. C., Young, S., Pursley, D. M., McCormick, M. C., & Zupancic, J. A. F. (2009). Are families prepared for discharge from the NICU? *Journal of Perinatology*, *29*(9), 623–629. https://doi.org/10.1038/jp.2009.58.

Please cite this article as: S. Hariati, L. McKenna, L. Lusmilasari, et al., Translation, adaptation and psychometric validation of the Indonesian version of the Readiness for H..., Journal of Pediatric Nursing, https://doi.org/10.1016/j.pedn.2020.05.010

Sousa, V. D., & Rojjanasrirat, W. (2011). Translation, adaptation and validation of instruments or scales for use in cross-cultural health care research : A clear and user-friendly guideline. *Journal of Evaluation in Clinical Practice*, *17*, 268–274. https://doi.org/10.1111/j.1365-2753.2010.01434.x.

Tavakol, M., & Dennick, R. (2011). Making sense of cronbach's alpha. *International Journal of Medical Education*, *2*, 53–55. https://doi.org/10.5116/ijme.4dfb.8dfd.

UNICEF (2019). 1 in 7 babies worldwide born with a low birthweight. https://www.unicef.org/press-releases/1-7-babies-worldwide-born-low-birthweight-lancet-global-health-unicef-who.

UNICEF-WHO. (2019). Low birthweight estimates: Levels and trends 2000 - 2015. https://www.unicef.org/media/53711/file/UNICEF-WHO Low birthweight estimates 2019 .pdf.

Weiss, M. E., Bobay, K. L., Bahr, S. J., Costa, L., Hughes, R. G., & Holland, D. E. (2015). A model for hospital discharge preparation. *The Journal of Nursing Administration*, *45* (12), 606–614. https://doi.org/10.1097/NNA.0000000000000273.

Weiss, M. E., Johnson, N. L., Malin, S., Jerofke, T., Lang, C., & Sherburne, E. (2008). Readiness for discharge in parents of hospitalized children. *Journal of Pediatric Nursing*, *23*(4), 282–295. https://doi.org/10.1016/j.pedn.2007.10.005.

Weiss, M. E., Lerret, S. M., Sawin, K. J., & Schiffman, R. F. (2020). Parent readiness for hospital discharge scale : Psychometrics and association with postdischarge outcomes. *Journal of Pediatric Health Care*, *34*(1), 30–37. https://doi.org/10.1016/j.pedhc.2019.06.011.

Weiss, M. E., & Piacentine, L. B. (2006). Psychometric properties of the readiness for hospital discharge scale. *Journal of Nursing Measurement*, *14*(3), 163–180. https://doi.org/10.1891/jnm-v14i3a002.

WHO (2018a). *Preterm birth.* World Health Organization. https://www.who.int/news-room/fact-sheets/detail/preterm-birth.

WHO (2018b). *Process of translation and adaptation of instruments.* World Health Organization. https://www.who.int/substance_abuse/research_tools/translation/en/.

Please cite this article as: S. Hariati, L. McKenna, L. Lusmilasari, et al., Translation, adaptation and psychometric validation of the Indonesian version of the Readiness for H..., Journal of Pediatric Nursing, https://doi.org/10.1016/j.pedn.2020.05.010