Psychometric Testing of the Newborn Skin Assessment Attitude Scale in Neonatal ICU Nurses

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ABSTRACT

OBJECTIVE: To develop a Newborn Skin Assessment Attitude Scale (NSAAS) for neonatal ICU (NICU) RNs.

METHODS: The study was conducted with 326 nurses working in NICUs in three cities in Turkey. The researchers evaluated the content and construct validity and reliability of the scale with item-total score correlation analysis, the test-retest method, and calculating the Cronbach α reliability coefficient.

RESULTS: The content validity index of the scale ranged between 0.87 and 1.00. Prior to exploratory factor analysis and confirmatory factor analysis, the Kaiser-Meyer-Olkin coefficient of the NSAAS was 0.976, and the Bartlett test of sphericity result was $\chi^2 = 15{,}337.052$ ($P < .001$). The scale was constructed with 35 items with factor loads greater than 0.40 and three subdimensions. Confirmatory factor analysis showed that the fit indices of the NSAAS were $\chi^2/df = 3.57$, root mean square error of approximation = 0.08, normed fit index = 0.98, non-normed fit index = 0.98, comparative fit index = 0.98, and standardized root mean square residual = 0.05. The overall reliability coefficient of the NSAAS was $\alpha = .978$. The test-retest coefficients of correlation were $r = 0.558$ for the overall scale and $r = 0.615$, $r = 0.504$, and $r = 0.598$ for the Awareness, Practice, and Avoidance subdimensions, respectively. In addition, no statistically significant difference was observed when comparing the test-retest mean scores for the total scale and the subdimensions ($P > .05$).

CONCLUSIONS: The NSAAS can be reliably used for measuring NICU nurses' attitudes toward newborn skin assessment.

KEYWORDS: attitude, neonatal intensive care, NICU, reliability, scale development, skin assessment, validity

ADV SKIN WOUND CARE 2024;37:40–7.

DOI: 10.1097/ASW.0000000000000086

INTRODUCTION

Newborn skin differs from adult skin both functionally and structurally.[1] Newborn skin is sensitive, thin, and fragile. The immaturity of the epidermal barrier makes newborn skin vulnerable to potential trauma. The barrier function of newborn skin begins in the prenatal period, and its maturation occurs gradually after birth. Whereas the skin is surrounded by amniotic fluid in the intrauterine period, it is exposed to a dry and cold environment in the extrauterine period. Newborn skin continues to mature during the first 2 weeks after birth,[1–4] and full maturation of newborn skin continues for at least 1 year.

Skin maturation of preterm infants differs by gestational age. Accordingly, as the gestational age decreases, the sensitivity and vulnerability of the newborn skin increase significantly. Maturation of the stratum corneum, the outermost layer of the epidermis, begins at 24 weeks of pregnancy and is complete by 34 weeks' gestation. As a result, infants born earlier than gestational week 34 have an increased risk of infection, skin breakdown, transepidermal water loss, impaired thermoregulation, absorption of topical agents, and/or physical trauma. Thus, it is important to evaluate newborn skin structure in relation to gestational age and skin characteristics.[5–9]

Newborn skin can be damaged as a result of the use of nasogastric or orogastric tubes, probes, and adhesive tapes. Failing to monitor newborn skin on a regular basis or exposing the skin to inappropriate procedures can increase morbidity and mortality. Providers should assess all potential risks and implement appropriate preventive measures starting from the admission of the newborn to the neonatal ICU (NICU) to reduce morbidity and mortality and positively affect the healing process. Regular assessment of the skin shortens the healing time by minimizing possible skin problems and enabling early diagnosis and treatment. Delays in recovery cause prolonged hospitalization of the newborn and pose an economic burden, both of which can be devastating for the parents.[8,10]

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The first step in the management of neonatal skin injuries is routine skin assessment based on skin physiology. Routine skin assessment in newborns admitted to the NICU is the primary step for minimizing possible skin injuries and identifying the patient's risk status.[11] Previous research has examined the knowledge and skills of neonatal nurses regarding skin assessment and care in both healthy and at-risk newborns. However, the skin condition of newborns is still evaluated subjectively using definitions such as "impaired skin integrity" or "complete skin integrity" instead of using an objective assessment tool with demonstrated validity and reliability for evaluating skin in both healthy and at-risk newborns. This current, subjective approach does not enable a full assessment of newborn skin.[12,13]

Attitude is a tendency that contributes to development of behavior. It includes three interactive components: affective, behavioral, and cognitive. Behaviors of NICU nurses toward newborn skin assessment are directly influenced by their individual attitudes.[14] Previous studies have discussed neonatal nurses' assumptions and opinions of subjective evaluation of newborn skin versus using objective tools, but to the authors' knowledge, no published study has reported on their attitudes.

Despite the availability of internationally accepted, evidence-based scales for the assessment of newborn skin, skin injuries have not decreased in prevalence. If NICU nurses have negative attitudes toward skin assessment, they may avoid using the skin assessment guidelines. Nurses' attitudes toward assessing newborn skin provide clues for understanding their behavioral tendencies to adopt or avoid the evaluation process. Therefore, understanding the attitudes NICU nurses toward neonatal skin assessment is paramount for the prevention and early treatment of newborn skin problems and associated complications.[13]

METHODS

With this methodological study, the authors developed a Newborn Skin Assessment Attitude Scale (NSAAS) for NICU RNs and evaluated its psychometric properties.

Study Sample

This study was conducted between May and November 2021 with 326 nurses working in NICUs of public and private hospitals in Batman, Gaziantep, and Mersin city centers in Turkey. Nurses were included in this study if they were working in the NICU of a participating institution and agreed to participate.

Sample sizes appropriate for scale development have been reported in the literature: 200 participants is fair, 300 participants is good, 500 participants is very good, and 1,000 or more participants is excellent.[15] Investigators also recommend that the sample size be five or more times larger than the number of items.[15–17]

Prior to testing the reliability and validity of the NSAAS, the 94-item scale was administered to 326 NICU RNs. Among them, 52 NICU RNs were asked to complete the scale again 4 weeks later to measure the test-retest reliability of the NSAAS. However, 11 NICU RNs did not provide complete data on the data collection forms, so the test-retest analyses were ultimately conducted on data from 41 nurses.

Data Collection Forms

The study materials included three forms: the individual semistructured interview form, a sociodemographic and occupational data form, and the NSAAS. Data were collected using a questionnaire generated using Google Docs and face-to-face interviews because of pandemic restrictions. Oral and written consent was obtained from the nurses prior to data collection.

Individual semistructured interview form. In the first phase of the study, the researchers developed a semistructured interview form with 10 items based on the literature. This interview form was used in the in-depth interviews to create the scale item pool.

Sociodemographic and occupational data form. This form comprised nine questions on the sociodemographic and occupational characteristics of the nurses. The form was completed by NICU nurses who agreed to participate in the study.

The NSAAS. Face-to-face in-depth interviews were conducted with 10 NICU nurses who were not included in the final scale administration using the individual semistructured interview form to help define the subject matter and determine the scope of the scale. The researchers developed a scale item pool with a total of 140 items using data from the interviews and from a review of the literature.

To evaluate face validity, two linguists who are experts in the Turkish language were consulted; the authors revised item wording for clarity and relevance in line with their suggestions. To test content validity, the researchers obtained opinions and suggestions regarding the draft scale from a panel of 16 experts including academic nurses conducting studies on newborn skin (n = 10), specialist nurses working in NICUs (n = 3), neonatologists (n = 2), and an educator who specializes in scale development. Expert opinions were examined using the Davis technique: The experts were asked to rate each item with a score ranging from 1 to 4 (1 = not relevant, 2 = needs major revision, 3 = needs minor revision, 4 = relevant).

In line with the suggestions of the experts, the researchers reduced the number of scale items from 140 to 94. The 46 removed items either had a content validity index (CVI) of less than 0.80, contained similar phrases to other items, or were not considered adequate to measure the concept in

question. Using the 94 items upon which consensus was reached, a 5-point Likert-type scale was developed, in which 1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, and 5 = strongly agree.

A pilot application of the scale was conducted with 16 nurses who met the sampling criteria but were not included in the sample. As a result of this pilot testing, the researchers determined that the scale items are comprehensible and took 10 to 15 minutes to complete.

Following pilot application, the 5-point Likert-type scale was administered to the nurses in the sample through Google Docs (online survey) and face-to-face interviews. The researchers then conducted reliability and validity analyses for the scale. The analyses showed that 59 items had an item-total score correlation of less than 0.30 and a factor-loading value of less than 0.40; these items were excluded from the scale.

Ultimately, the scale included a total of 35 items categorized into three subdimensions: awareness (items 1–19), practice (items 20–29), and avoidance (items 30–35). The final version contains six negative (reverse-scored) items (items 30–35). Scores for the 35 items are summed to calculate the total score, which ranges from 35 to 175 points. Similarly, subdimension scores are obtained by adding the item scores in each subdimension. Higher scores indicate a more positive attitude of nurses toward newborn skin assessment.

Statistical Analysis

Descriptive statistics were summarized as frequency (percentage) for categorical variables, and as mean and SD for numerical variables. Data were checked for a normal distribution using the Shapiro-Wilk test. The CVI was used to determine agreement among expert ratings. Pearson correlation analysis was used for item-total score correlation analysis of the scale and subdimensions, and Cronbach α coefficient was used to determine internal consistency. The authors used exploratory factor analysis (EFA) to determine item-factor relationships and used confirmatory factor analysis (CFA) to test whether the items and subdimensions explained the unique construct of the scale. Independent-samples *t* tests were used for comparisons of two independent groups, and the relation between the factors was calculated using Pearson correlation coefficients. The authors conducted paired *t* tests and Pearson correlation analysis to evaluate the time invariance (test-retest) of the scale. The study data were analyzed using SPSS (version 22.0; IBM Corp), SPSS AMOS 24.0, and LISREL 8.4 (Scientific Software International Inc). All analyses were performed at $\alpha = .05$ significance level and reported with 95% CIs.

Ethical Consideration

The study was approved by the institutional review board of Hasan Kalyoncu University (date: March 18, 2021; no. 2021/031), and written permission was obtained from Batman, Gaziantep, and Mersin Provincial Health Directorates and the private hospitals where the study was conducted.

RESULTS

Participant Characteristics

Among the 326 NICU nurses participating in the study, 86.5% (n = 282) were women, almost half (49.4% [n = 161]) were in the 18- to 25-year age group, and the mean age was 27.14 (SD, 5.26) years. Further, 43.9% of the nurses (n = 143) resided in Mersin, 64.4% (n = 210) were single, and 47.5% (n = 155) were university graduates. In terms of occupational characteristics, similar percentages of nurses were working at public and private hospitals (50.9% [n = 166] vs 49.1% [n = 160], respectively), 37.1% (n = 121) had been working in the NICU for 1 year or less, 78.8% (n = 257) were level III nurses, and 70.2% (n = 230) were using the observation method for skin assessment.

Findings Regarding the Validity of the NSAAS

Content validity. In the first stage, the scale item pool consisting of 140 items was presented to 16 experts for consideration. The researchers used CVI to evaluate the expert opinions, and items with a CVI value of 0.80 or higher were retained in the scale. In line with suggestions from the experts, a total of 46 items were excluded, reducing the number of scale items to 94. The CVI values of these 94 items were between 0.87 and 1.00. After gaining consensus among the experts, researchers administered this 94-item scale to a sample of 326 nurses.

Exploratory factor analysis. Before EFA and CFA, the Kaiser-Meyer-Olkin (KMO) coefficient of the NSAAS was 0.976, and the Bartlett test result was $\chi^2 = 15{,}337.052$, $P < .001$. Based on KMO and Bartlett test results, the researchers concluded that the data set was suitable for EFA; 59 items with a factor-loading value less than 0.40 were excluded from the scale, and the analysis was repeated. After factor analyses of the 35-item NSAAS, a three-factor construct was developed with an eigenvalue greater than 1.00, explaining 76.53% of the variance (Table 1).

To determine the number of factors, a scree plot was generated. Three factors were identified at the point where the slope of the curve leveled off (Figure 1). The three factors generated were designated awareness, practice, and avoidance. The awareness subdimension explained 41.63% of the total variance, the practice subdimension explained 21.63%, and avoidance subdimension explained 13.26%. According to EFA, the factor-loading values were 0.563 to 0.845 for the awareness subdimension, 0.598 to 0.731 for the practice subdimension, and 0.644 to 0.892 for the avoidance subdimension.

Confirmatory factor analysis. The accuracy of the factors identified by EFA was checked via CFA. The

Table 1. FACTOR-LOADING VALUES IN PRINCIPAL COMPONENTS ANALYSIS OF NSAAS ITEMS AND PERCENTAGE OF VARIANCE EXPLAINED BY EACH FACTOR (N = 326)

Items	Factor-Loading Value	Variance Explained, %
Factor 1: Awareness		41.63
Newborn skin assessment should be performed according to gestational age.	0.563	
I take care to evaluate skin color in newborns.	0.709	
A scale appropriate for gestational age should be used for newborn skin assessment.	0.635	
The neonatal nurse should be competent in the assessment of skin.	0.755	
I would like to participate in up-to-date training sessions on newborn skin assessment.	0.825	
I can perform risk stratification for skin problems that may arise in newborns.	0.699	
I am aware that tools used for patient care and treatment adversely affect skin integrity (eg, orogastric tubes, transdermal patches, solutions, probes).	0.804	
I know that a pressure injury can develop very quickly in newborns.	0.845	
I do not hesitate to ask my colleagues for help when I need it while doing a newborn skin assessment.	0.785	
I think that newborn skin assessment results should not vary depending on the assessor.	0.768	
I also perform newborn skin assessment whenever I deem necessary out of routine.	0.743	
I believe that the newborn skin care plan should be revised according to the results of skin assessment.	0.795	
I think that changing positions in newborns will prevent skin injury.	0.827	
I believe that family-based care practice can preserve the integrity of newborn skin.	0.726	
I am aware that newborn skin is immature.	0.822	
I am aware of the significance of vernix caseosa for newborn skin.	0.841	
I am aware of the effects of bathing and skin care practices on newborn skin pH.	0.834	
I am aware of the importance of daily skin care for newborns.	0.741	
I am aware of the importance of incubator humidity level for newborn skin in the neonatal ICU.	0.811	
Factor 2: Practice		21.63
Skin assessment is an important component of skin care in the neonatal ICU.	0.598	
I don't consider skin assessment as a waste of time.	0.625	
I share my knowledge on skin assessment with my colleagues.	0.667	
It is important for me to do the newborn skin assessment correctly.	0.701	
I believe that the scales used for skin assessment will help standardize care.	0.658	
I think skin assessment scales can improve record keeping.	0.731	
The results of newborn skin assessment should be recorded on a regular basis.	0.702	
I regularly check skin humidity in newborns.	0.700	
I take into account newborn mobility while performing a newborn skin assessment.	0.676	
I know the characteristics of newborn skin.	0.648	
Factor 3: Avoidance		13.26
Preservation of skin integrity in newborns is important only during hospitalization.	0.845	
I believe that skin assessment scales are not used due to the shortage of nurses.	0.644	
I don't think it is the responsibility of nurses to perform skin assessment in newborns.	0.892	
I believe that newborn skin assessment should only be done when deemed necessary.	0.888	
I think that extra care in skin assessment is required only for preterm newborns.	0.756	
I feel like I am incompetent in newborn skin assessment.	0.721	
Overall scale		76.53

Abbreviation: NSAAS, Newborn Skin Assessment Attitude Scale.

path diagram depicting the model with three factors is shown in Figure 2.

The *t* statistics for each item of the scale are presented in the path diagram. The *t* statistics indicated that the items in each subdimension were statistically significant and that three factors can adequately explain NICU nurses' attitudes toward newborn skin assessment.

Figure 1. SCREE PLOT FROM THE EXPLORATORY FACTOR ANALYSIS

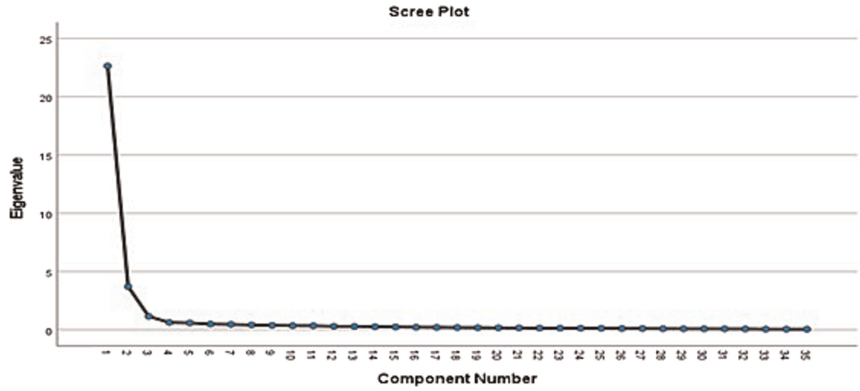
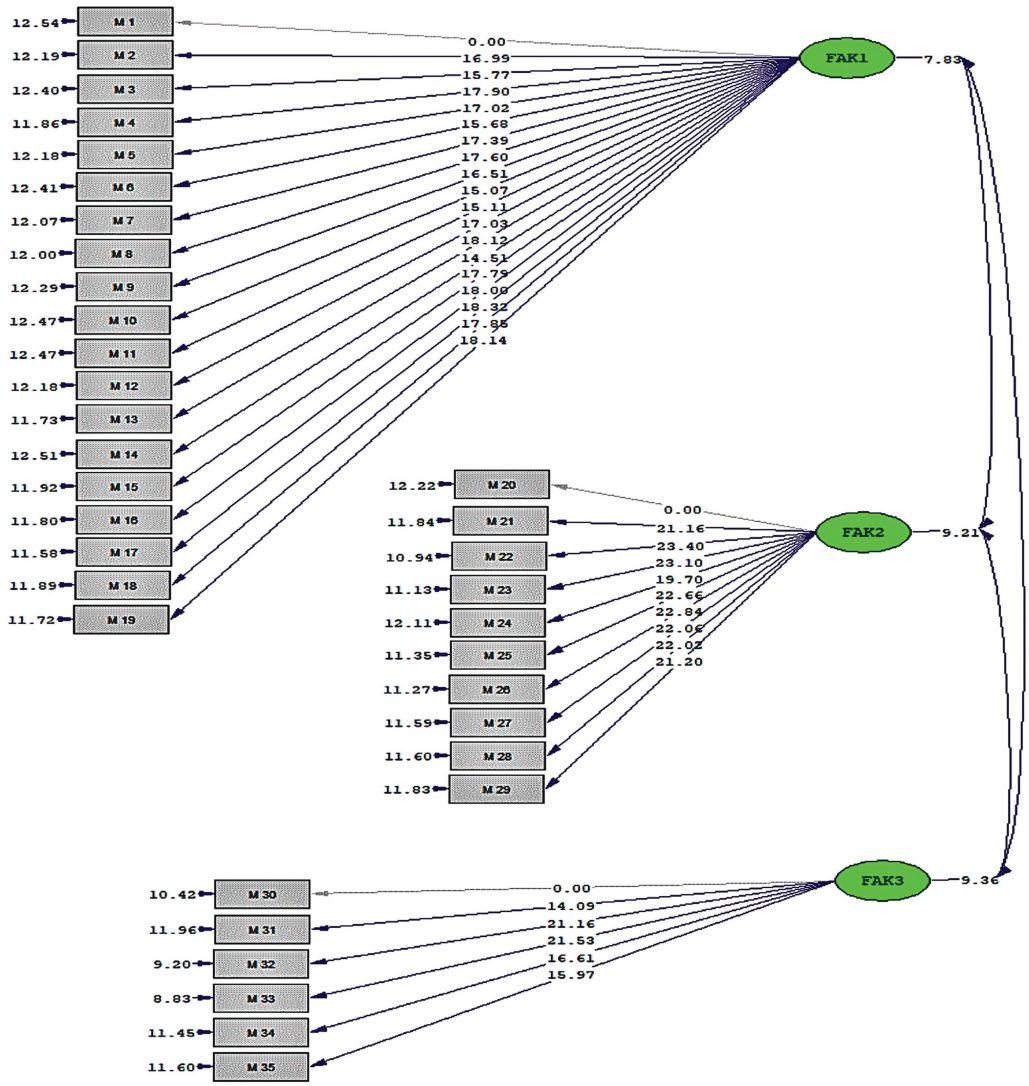


Figure 2. PATH DIAGRAM OF NSAAS



Abbreviations: FAK, factor; NSAAS, Newborn Skin Assessment Attitude Scale.

Table 2. CRONBACH α RELIABILITY COEFFICIENTS OF THE NSAAS AND SUBDIMENSIONS (N = 326)

Overall Scale and Subdimensions	No. of Items	Possible Minimum-Maximum Scores	Mean (SD)	Cronbach α Reliability Coefficient
NSAAS	35	35–175	135.20 (31.85)	.978
Awareness subdimension (items 1–19)	19	19–95	77.60 (18.54)	.983
Practice subdimension (items 20–29)	10	10–50	40.06 (10.41)	.977
Avoidance subdimension (items 30–35)	6	6–30	17.54 (7.57)	.919

Abbreviation: NSAAS, Newborn Skin Assessment Attitude Scale.

According to the CFA, factor loadings were 0.74 to 0.94 for the awareness subdimension, 0.82 to 0.94 for the practice subdimension, and 0.69 to 0.90 for the avoidance subdimension. The fit indices of the NSAAS were as follows: $\chi^2/df = 3.57$, root mean square error of approximation (RMSEA) = 0.08, normed fit index (NFI) = 0.98, non-normed fit index (NNFI) = 0.98, comparative fit index (CFI) = 0.98, and the standardized root mean square residual (SRMR) = 0.05.

Findings Regarding the Reliability of the NSAAS

Cronbach α reliability coefficients. Table 2 shows Cronbach α reliability coefficients for the total and subdimension scores of the NSAAS. The overall reliability coefficient of the NSAAS was $\alpha = .978$. The reliability coefficients were $\alpha = .983$ for the awareness subdimension, $\alpha = .977$ for the practice subdimension, and $\alpha = .919$ for the avoidance subdimension.

Item-total score analysis. When the item-total score correlations of the 35-item scale were examined for reliability, the authors determined that the coefficients of correlation between each scale item and the total score ranged between 0.367 and 0.891 ($P < .001$).

Considering the item-subdimension score correlations of the NSAAS, the coefficients of correlation were 0.735 to 0.924 for the awareness subdimension, 0.821 to 0.925 for the practice subdimension, and 0.664 to 0.845 for the avoidance subdimension; all correlations were statistically significant (Ps < .001).

Regarding correlations between the total scale score and the subdimension scores, the total scale score showed positive, highly significant associations with the awareness ($r = 0.957$, $P < .001$), practice ($r = 0.944$, $P < .001$), and avoidance ($r = 0.564$, $P < .001$) subdimension scores.

Test-retest reliability. Correlations between the test-retest scores at the total score level and the subdimension level of the NSAAS and comparisons of the mean scores are presented in Table 3. There was a positive correlation between the test-retest scores at the total score level and the subdimension level (overall scale: $r = 0.558$, $P < .001$; awareness subdimension: $r = 0.615$, $P < .001$; practice subdimension: $r = 0.504$, $P = .001$; avoidance subdimension: $r = 0.598$, $P < .001$). In addition, no statistically significant difference was observed when the test-retest mean scores for the total scale score and subdimension scores were compared ($P > .05$).

DISCUSSION

There are two key criteria that a measurement tool should fulfill: validity and reliability. Validity refers to how accurately a tool measures what it aims to measure.[18,19] Reliability refers to the ability of a scale to measure the construct consistently (ie, whether the results can be reproduced under the same conditions in independent measurements and in different settings).[20]

In this study, content validity was assessed through evaluation by expert judges. The authors aimed to understand to what extent the items in the draft scale explained the concept to be measured and ensure that only relevant items are included. An acceptable indicator of content validity is consensus among the majority of experts.[20] The authors used CVI to evaluate the feedback from 16 experts, after which a total of 94 items were retained in the scale. The CVI values of these items ranged between 0.87 and 1.00; as reported in the literature, an item-level CVI greater than 0.80 is required for content validity.[21] Therefore, content validity was demonstrated for those items retained in the NSAAS.

Table 3. TEST-RETEST SCORE CORRELATIONS AND MEAN SCORE COMPARISONS (N = 41)

Overall NSAAS Scale and Subdimensions	Test, Mean (SD)	Retest, Mean (SD)	*r*	*P*	*t*	*P*
Overall scale	144.78 (20.89)	139.82 (13.42)	0.558	<.001	1.818	.077
Awareness subdimension	79.24 (12.18)	81.34 (9.54)	0.615	<.001	–1.367	.179
Practice subdimension	41.07 (7.13)	42.14 (5.20)	0.504	<.001	–1.078	.287
Avoidance subdimension	16.02 (6.21)	16.34 (6.35)	0.598	<.001	–0.360	.721

Abbreviation: NSAAS, Newborn Skin Assessment Attitude Scale.

Factor analysis is an important approach for evaluating the construct validity of a scale by grouping a large number of related variables into a handful of underlying factors. For scale development studies, EFA must be conducted prior to CFA.[19,20,22] However, it is first necessary to evaluate the results of KMO and the Bartlett test of sphericity to check whether the data set is suitable for EFA. A KMO of 0.5 or higher is required to perform the planned analysis. Although a KMO value of 0.70 or greater is generally considered satisfactory, some researchers argue that a value of 0.80 or higher should be used as a perfect fit criterion for factor analysis. For the Bartlett test, $P < .05$ indicates the suitability of the data set for factor analysis.[15,17,20] In the present study, the KMO value was 0.976, and the Bartlett test result was $\chi^2 = 15{,}337.052$, $P < .001$; thus, the data set was deemed suitable for EFA.

After using principal components analysis with orthogonal rotation to evaluate the EFA of the NSAAS, the researchers removed 59 items from the scale that had factor-loading values of less than 0.30. Thus, the number of NSAAS items decreased to 35. Previous researchers have argued that items that are not unifactorial and those with a difference of less than 0.10 between factor-loading values and/or those with a factor-loading value lower than 0.30 should be excluded from evaluation. This value may vary depending on the sample size: With a sample size of 300 participants, a factor-loading value of 0.30 is accepted as the lower threshold. In general, a factor-loading value between 0.30 and 0.59 is considered medium, and a factor-loading value of 0.60 or greater is considered high.[20]

Although an eigenvalue of 1.00 or greater is taken into account during a factor analysis, the total percentage of variance is expected to be greater than 40%.[17] Accordingly, as a result of factor analysis of the 35-item NSAAS, a three-factor structure (awareness, practice, avoidance) with an eigenvalue greater than 1.00 was obtained. These factors explained 76.53% of the total variance of the scale, and all had factor-loading values greater than 0.5. Thus, the authors concluded that an adequate level of total variance was obtained in this scale development study, and the factor-loading values of the items in the subdimensions were significant.

The main advantage of CFA lies in its ability to aid researchers in bridging the often-observed gap between theory and observation. Instead of analyzing data with an EFA where each item is free to load on each factor and potentially facing a solution inconsistent with initial theory, CFA can provide valuable information regarding the fit of the data to the specific, theory-derived measurement model (where items load only on the factors they were designed to measure).[23] Although CFA is used to evaluate how well the items are represented by the factors identified for the scale and whether the level of representation is sufficient, it also determines to what extent these factors define the scale construct.[20,24] The fit index values of the CFA model are interpreted as "acceptable" or "excellent." In this study, χ^2/df, RMSEA, CFI, NNFI, NFI, and SRMR goodness-of-fit indices were examined as part of CFA. For scale development studies, χ^2/df of less than 3 is an "excellent" fit, and χ^2/df of 3 to 5 indicates an "acceptable" fit.[20,22,25] Fit indices of $\geq$0.90 and error indices of $\leq$0.05 indicate that the model has a good fit. For the scale developed in this study, a χ^2/df of 3.57 showed acceptable fit, and NFI, NNFI, and CFI values of 0.98 showed excellent fit. An RMSEA value of 0.08 indicates acceptable fit, and an SRMR value of 0.05 denotes good fit.

In general, a measuring instrument may be reliable without being valid, but if a measuring instrument is valid, it is likely also to be reliable.[26] As part of reliability analyses of the NSAAS, the authors first examined its internal consistency. Internal consistency is often used as a measure of reliability in Likert-type scales.[17] Cronbach α coefficient measures the internal consistency of items in a scale and is expressed as a number between 0 (low internal consistency) and 1 (high internal consistency).[27,28] In this study, Cronbach α coefficients were .978 for the NSAAS, .983 for the awareness subdimension, .977 for the practice subdimension, and .919 for the avoidance subdimension. Based on these values, it was concluded that the overall NSAAS and its subdimensions all have good reliability.

As an additional measure of internal consistency, the authors also analyzed the item-total score correlation. Item-total score correlation analysis is used to determine the level of correlation between the item score and the overall assessment score. In general, the coefficient of correlation is calculated for item analysis when choosing items for a scale.[20,28] The lowest threshold for item-total score correlation coefficient is 0.20, with values of 0.20 or higher indicating good discrimination and reliability.[29] Considering the item-total score correlation of the 35-item NSAAS, the correlation coefficients of the scale ranged between 0.367 and 0.891, and all of the items showed significant associations with the total score. Similarly, all three subdimensions had high item-subdimension score correlations (0.664–0.925; P's $< .001$). Looking at the correlations between the total scale score and the subdimension scores, the total scale score showed strong, positive correlations with both the awareness and practice subdimension scores ($r = 0.957$, $P < .001$; $r = 0.944$, $P < .001$, respectively) and a moderate, positive correlation with the avoidance subdimension score ($r = 0.564$, $P < .001$). Collectively, these results show that the individual items included in the NSAAS subdimensions have a good correlation with the total score.

The test-retest method, which is one of the most widely used reliability analyses, addresses the time invariance

feature of a scale. Two measurements should be taken 2 to 6 weeks apart,[27,30] and Pearson product-moment correlation analysis is used for this purpose.[20,27] The coefficient of correlation obtained from this test can range in value from −1 to +1, with values closer to +1 indicating greater reliability. In the current study, 41 nurses completed the same test twice, 4 weeks apart; researchers evaluated the test-retest reliability coefficient using Pearson product-moment correlation analysis. The analysis showed positive correlations between the test-retest scores of the overall scale and three subdimensions. Moreover, no statistically significant difference was observed when comparing the test-retest mean total scale scores and subdimension scores. Thus, the scale offers consistent measurements and has test-retest reliability.

Limitations

Study participants were limited to NICU nurses in Turkey, limiting the generalizability of the findings. Because of pandemic restrictions, interruptions occurred occasionally when conducting online surveys and face-to-face interviews. Further, there were many other ongoing trials at the universities and private hospitals at the time of the study, which may have negatively affected the participation level of the nurses.

CONCLUSIONS

The NSAAS is a reliable and valid scale for measuring NICU nurses' attitudes toward newborn skin assessment. The scale will increase nurses' awareness regarding newborn skin and contribute to the improvement of skin assessment and skin care practices for newborns. It will also indirectly help prevent the development of skin problems. Clinical leaders can use the NSAAS to gain insights from NICU RNs and customize education plans to improve RNs' knowledge and attitudes toward neonatal skin assessments, ultimately bettering patient outcomes. Further studies are warranted for the expanded use of this scale by nurses caring for neonatal populations in other departments (eg, pediatric ICU, pediatrics, nursery, and mother/baby units). ●

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