

Behaviors of Transition to Complementary Feeding Scale: A Scale Development Study

✉ Nurten Arslan¹, ✉ Meltem Kürtüncü¹, ✉ Pinar Menderes Turhan²

¹Department of Pediatric Nursing, Zonguldak Bülent Ecevit University Faculty of Health Sciences, Zonguldak, Türkiye

²Clinic of Pediatrics, Zonguldak Maternity and Child Health Hospital, Zonguldak, Türkiye

Abstract

BACKGROUND/AIMS: The aim of this methodological-descriptive study was to assess the validity and reliability of the “Behaviors of Transition to Complementary Feeding Scale (BTCF-S).”

MATERIALS AND METHODS: This study was designed as methodological-descriptive one. The sample of this study consisted of 370 mothers with 6-24-month-old babies. The data were obtained using the Parent’s Information Form and BTCF-S.

RESULTS: The Cronbach’s alpha values for this scale and its five subscales were 0.95, 0.95, 0.83, 0.85, 0.75 and 0.85, respectively. Item-total correlations for this scale varied between 0.30 and 0.83 ($p < 0.001$). The Indices of Model Fit used in this study were as follows: the root mean square error of approximation: 0.073, the goodness-of-fit-index: 0.91 and the comparative fit index: 0.90. In the construct validity testing, the Kaiser-Meyer-Olkin value was 0.93 and Bartlett’s sphericity test was 6,923.86 ($p < 0.001$). The results of the factor analysis indicated a scale with 28 items, and five factors, where $R^2 = 64.56\%$. The total Cronbach’s alpha value for this scale is 0.95.

CONCLUSION: According to our results, it was shown that this scale is a valid and reliable instrument which can be used to detect the behaviors of transition to complementary feeding among 6-24-month-old babies of Turkish mothers. The BTCF-S is a convenient tool for professionals in managing and preventing behavioral problems in the transition to complementary feeding.

Keywords: Behavior, complementary feeding, infant nutrition, reliability, validity

INTRODUCTION

Acquiring habits of healthy nutrition is important at all times of life and starts when a baby is still in the womb. This is even more important in the first two years of life, when growth and development occur at an extremely rapid pace.¹⁻⁴ Nutrition in the first 6 months of life fundamentally consists of breast milk. Babies of ages 6-24 months go through a transition into being fed complementary foods in addition to breast milk. The transition to complementary foods is a significant step in the life of a baby and a time in which the infant first becomes

acquainted with different types of foods.⁵⁻⁸ The psychosocial problems which are experienced at this junction have an impact on the growth and wellbeing of the child in their later years. It is for this reason that the feeding behaviors in the transition to complementary feeding gain importance.^{1,9,10}

Eating behaviors start to develop in the first years of life. Nutrition is one of the basic needs which must be met in infants and children. Nutrition plays a fundamental role in ensuring healthy growth and development.¹⁻³ This process is affected by various factors. Behaviors

To cite this article: Arslan N, Kürtüncü M, Turhan PM. Behaviors of Transition to Complementary Feeding Scale: A Scale Development Study. Cyprus J Med Sci. 2024;9(3):192-197

ORCID IDs of the authors: N.A. 0000-0003-1980-5661; M.K. 0000-0003-3061-5236; P.M.T. 0000-0002-8046-4889.



Address for Correspondence: Nurten Arslan

E-mail: anurtenarslan@gmail.com

ORCID ID: orcid.org/0000-0003-1980-5661

Received: 09.07.2023

Accepted: 06.03.2024



Copyright © 2024 The Author. Published by Galenos Publishing House on behalf of Cyprus Turkish Medical Association.

This is an open access article under the Creative Commons Attribution-NonCommercial 4.0 International (CC BY-NC 4.0) License.

related to the transition to complementary feeding constitute one such factor. Problems which may arise in this transition may continue throughout an individual's lifetime. The transition to complementary feeding can affect a child's eating behavior and health. Studies have indicated that a rational plan of nutrition in the infant's transition to complementary food can lower the risk of obesity, iron deficiency and anemia and prevent negative effects such as eating disorders.^{2,10} Researchers have also shown that positive eating behaviors acquired in the process of the transition to complementary foods can facilitate self-feeding at an early stage and achieve a faster transition to eating foods consumed by the rest of the family.^{2,10-13}

It is because of this that correctly identifying the problems related to a baby's transition to complementary feeding is important.^{5,10-13} The use of effective tools which can correctly and efficiently measure transition behaviors in the shift to complementary feeding can be particularly helpful. Silverman et al.¹⁴ developed the *Infant and Child Feeding Questionnaire* in order to identify feeding problems in children up to the age of four. The *Child Eating Behavior Questionnaire* scale, which is used to measure eating behaviors, is a scale developed for children. However, this scale is not suitable for younger age groups.¹⁵ This scale investigates the nutritional issues encountered in children between the ages 2-9 years. Another measure which is used is the *Child Feeding Questionnaire*, which assesses the eating status of preschool children. Mallan et al.¹⁶ *Baby Eating Behavior Questionnaire* evaluates the feeding behavior of infants. The Turkish literature includes various descriptive and prevalence studies related to a baby's transition to complementary feeding.^{3,6,13} However, no instrument was found in the literature which measures the eating behaviors and transition behaviors in a baby's shift to complementary feeding.

The aim of this study was to develop a culture-specific measuring tool to be used in assessing transition behaviors in the shift to complementary feeding in 6-24-month-old babies, and to test the instrument's validity and reliability.

MATERIALS AND METHODS

Design

This study was carried out in order to assess the validity and reliability of the "Behaviors of Transition to Complementary Feeding Scale (BTCF-S)" in Türkiye. This research was methodologically designed and was a cross-sectional and descriptive study.

Participants

In this study, the population consisted of 440 people. From this population, 370 parents were selected for the sample from the volunteers who wanted to participate in this research. Considering the voluntary basis in selecting the sample from this universe, the study sample consisted of 370 individuals. In scale development, ten times as many individuals as the number of individuals to be determined in sample selection should be included in the research. Therefore, this principle was considered in the study's sample selection (n=420).¹⁷⁻¹⁹

Ethical Considerations

Ethical approval was obtained from Zonguldak Bülent Ecevit University Clinical Research Ethics Committee (approval number: 2019-173-16/10, date: 18.12.2019).

For the conduct of this study, institutional permissions and written consent were obtained from the participants via a voluntary consent form. In addition, the researchers were informed about the research and all personal information was kept confidential.

Data Collection Tools

Parent's Information Form

This form was developed by the researchers. The form includes demographic information from the participants. The form also includes data on the breastfeeding status of the babies.

BTCF-S

This scale was developed in order to evaluate behaviors in the transition to complementary feeding in babies between the ages of 6-24 months. To create the item pool of the scale, face-to-face interviews were held with a group which was similar to the study sample. Mothers with previous experience with complementary feeding were asked in the interviews to write down their experiences with the transition to complementary food. Twenty mothers participated in these discussions, which resulted in the creation of an item pool of common responses. In addition, a conceptual search was made of the relevant literature. Ultimately, a pool of items of the scale was created in line with the literature and with what was learned in the interviews with the mothers. After these interviews with the mothers, a pool of 48 items was created. This form was presented to 12 experts in draft form for content validity. The scale had five subscales pertaining to the reasons for the development of various behaviors of transition to complementary feeding: "positive behaviors during feeding", "willingness to feed", "negative behaviors during feeding", "unwillingness to feed", and "rejection of feeding". The answers to the scale items were prepared as a five-point Likert scale. Accordingly, the answers are scored from one to five which correspond with never and always. Some of the items, namely items 2, 5, 9, 10, 11, 12, 13, 18, 19, 20, 21, 22, 23, 24, 25, and 26 are scored in reverse. Scores from this scale range from a minimum of 28 points to a maximum of 140 points. The higher the score, the more there is a display of behaviors indicating a transition to complementary feeding.

Statistical Analysis

SPSS version 25 and AMOS 25 package program were used to analyze the statistical data. In factor analysis, first EFA and then CFA were performed. The internal consistency of the scale was evaluated with Cronbach's alpha and the maximum likelihood method. The intra-class correlation coefficient (ICC) was used for test-retest analysis. The relationships between the item-total and item-subscale correlations were examined with Pearson's correlation analysis.

RESULTS

Demographic Variables

Participants in this study were at least 21 and at most 45 years old. When their average age was examined, it was found to be 31.42±4.50 years. 55.4% of the mothers were university graduates and 31.6% were housewives. 52.7% of the mothers had one child, and 37% had two children. It was found that the income of 34.6% of the mothers was equal to their expenditure.

Validity

Content validity was used to obtain expert opinions. A draft scale prepared by the researcher and consultant was submitted for the opinion and evaluation of experts in the field. The expert group of 12 people consisted of faculty members in the field of pediatric nursing, pediatric nurses, and mothers. As a result of the suggestions made in the evaluation of the experts, the scale items were rearranged by the researchers. As a result of the review, 48 items in the draft scale were preserved. The scale draft was resent to the experts. The experts evaluated each item in terms of appropriateness and understandability, scored each statement between 1-4 points, and were asked to write their opinions and suggestions regarding each item.

The content validity index (CVI) was used to evaluate the expert opinions. According to this method, at least five and at most 40 expert opinions are needed to assess each item in the scale. In considering the views of a total of 12 experts, the content validity rate of each item was calculated. The item content validity index (I-CVI) and the scale's content validity index (S-CVI) were calculated. The experts found I-CVI to be between 0.91-0.98 for each item, and S-CVI was 0.96 for the scale.²⁰⁻²³

In the EFA, the KMO coefficient was found to be 0.934 and Barlett's sphericity test result was found to be $\chi^2=6,923.861$, $p<0.001$. The eigenvalues of the five factors were found to be less than one. The variances were 19.6%, 12.8%, 12.1%, 10.1% and 9.9% for the five subscales designated as factors 1, 2, 3, 4 and 5, respectively. The total explained variance was 64.56%. The factor loadings were between 0.52-0.79 for factor 1; they were between 0.57-0.76 for factor 2, between 0.50-0.72 for factor 3, between 0.47-0.73 for factor 4 and between 0.71-0.85 for factor 5 (Table 1).

In the CFA, factor loadings were between 0.61-0.92 for Factor 1, they were between 0.56-0.85 for factor 2, between 0.57-0.86 for factor 3, between 0.46-0.75 for factor 4 and between 0.68-0.88 for factor 5. In scale evaluation, fit indices need to be maintained. In this scale, the indexes were GFI: 0.91, normed fit index: 0.95, non-normed fit index: 0.93, CFI: 0.90, incremental fit index: 0.90, χ^2/df : 2.90, $p<0.001$ and root mean square error of approximation (RMSEA): 0.073, respectively. The lowest correlation coefficient of the sub-dimensions of this scale was 0.50 and it varied between 0.50-0.81 for all factors (Figure 1).

Table 1. Factor loadings, eigenvalues and explained variance (%) for the five extracted factors after varimax rotation (n=370)

Sub-scales	Items	Factor loads	Eigen-value	Explained variance
F1	I.15. My baby looks happy when feeding/eating.	0.789	5,495	19,626
	I.12. My baby feeds/eats with an appetite.	0.772		
	I.14. My baby likes mealtimes.	0.765		
	I.4. My baby enjoys eating.	0.733		
	I.3. My baby has fun feeding/eating.	0.731		
	I.38. My baby enjoys his/her food.	0.701		
	I.20. My baby is unwilling to feed/eat.	0.638		
F2	I.40. My baby is calm between feedings/meals.	0.520	3,586	12,808
	I.21. My baby is eager to feed him/herself.	0.757		
	I.22. My baby wants to taste everything that is put before him/her.	0.744		
	I.24. My baby picks up the food placed before him/her and puts it into his/her mouth.	0.719		
	I.1. My baby enjoys feeding him/herself.	0.643		
F3	I.25. My baby likes tasting new foods.	0.566	3,387	12,096
	I.19. My baby cries at feeding/mealtimes.	0.718		
	I.16. My baby is restless when feeding/eating.	0.682		
	I.2. My baby cries when feeding/eating.	0.676		
	I.17. My baby gets angry when feeding/eating.	0.597		
	I.11. My baby needs music/cartoons/videos/games when feeding/eating.	0.573		
F4	I.29. My baby backs away when food is put before him/her.	0.497	2,823	10,082
	I.18. My baby hurls or throws food on the floor at mealtimes.	0.729		
	I.32. My baby spits out his/her food.	0.660		
	I.33. My baby kicks, scratches or displays other aggressive behavior during feeding/mealtimes.	0.572		
	I.30. My baby plays with his/her food when it is put in front of him/her.	0.566		
	I.28. My baby shuts his/her mouth at feeding/mealtimes.	0.482		
F5	I.27. My baby keeps his/her food in his/her mouth for a long time.	0.465	2,786	9,950
	I.34. My baby rejects any new food put before him/her.	0.854		
	I.35. My baby does not like to eat food that smells different or is of a different consistency.	0.811		
	I.26. My baby rejects new food.	0.707		
Total				64,562

F: Factor, I: item.

Reliability

Content and construct validity methods, which are frequently used methods, were used for the reliability analysis. The CVI cut-off point for content validity was set at 0.78 (Polit and Beck²¹). Since the CVI value of six of the items in the scale were lower than the cut-off point, they were removed from the scale and test-retest analyses were performed on the 42-item form. In the factor analysis of the 42-item scale, 14 items with factor loadings below 40% were removed from the scale and a 28-item research form was obtained.

Since the scale items were planned as sub-dimensional, the varimax rotation method was used in the EFA analysis. It was concluded that the factor loadings of the five factors obtained in the EFA analysis were in the range of 0.40-0.84. The varimax rotation method is another method used in the analysis of sub-dimensional scales.^{24,25} While the loadings of each factor varied between 0.40 and 0.84, the Cronbach's alpha coefficient was between 0.75 and 0.95. The Cronbach's alpha coefficient of this scale was 0.95.

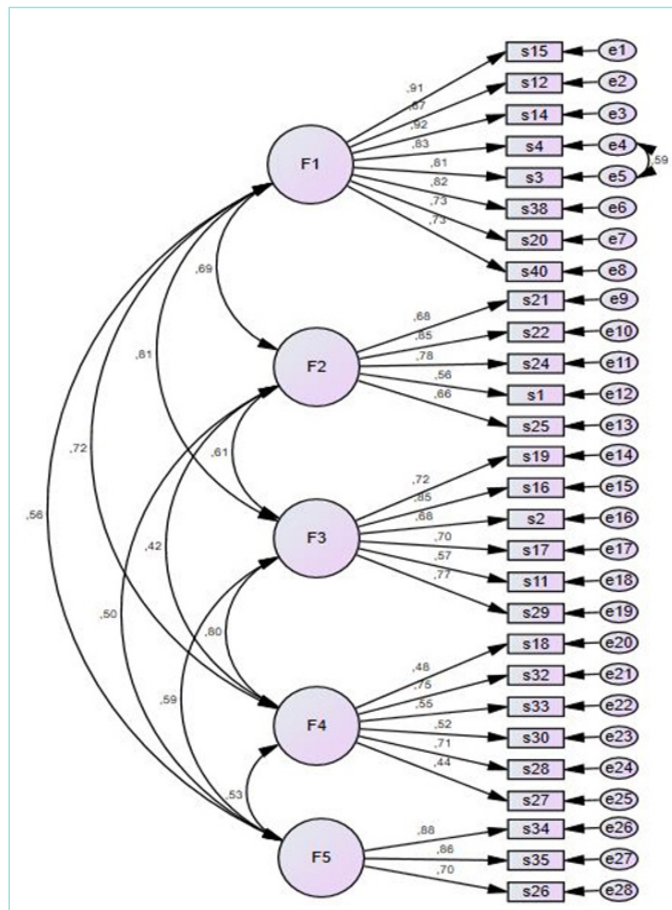


Figure 1. Confirmatory factor analysis of BTCF-S.

Model fit indices. GFI: 0.91, NFI: 0.95, NNFI: 0.93, CFI: 0.90, IFI: 0.90, χ^2/df : 2.90, $p < 0.001$, RMSEA: 0.073.

BTCF-S: Behaviors of Transition to Complementary Feeding Scale, GFI: Goodness-of-fit index, NFI: Normed fit index, NNFI: Non-normed fit index, CFI: Comparative fit index, IFI: Incremental fit index; χ^2/df : Chi-square/degrees of freedom, RMSEA: Root mean square error of approximation.

DISCUSSION

Validity

For a scale to measure concrete and abstract concepts together, it must have validity and reliability.²¹ In order to talk about the concept of validity in a scale, the scale items must accurately measure the concept being measured. For an instrument to be valid, it means that it is appropriate to the concept and measures that subject without error, that is, it measures what it is intended to measure.^{24,25} Content, scope and structure validity are used in the validity analysis in order to ensure that the concept being measured is a real measurement.^{9,24-26} In this study, content and construct validity were explored. Criterion validity was not used since there was no appropriate scale which could be applied to the sample group.

CVI was used to evaluate the inter-interpretor agreement. High CVI values indicate high inter-interpretor agreement. In this study, I-CVI and S-CVI values were greater than 0.78, and there was high agreement among the commentators. There are five sub-dimensions with eigenvalues greater than one. These dimensions explain 64.5% of the total variance and are quite high. When the literature was examined, it was seen that the acceptable limit for variance is 40.0-60.0%. The explained variance value of this study was above the acceptable limit.^{17,23,27} According to these findings, the factor structure of this scale was evaluated as being quite strong.

In order for a scale to have a strong factor structure, the factor loadings of the scale items must be 0.40 or above. In this study, item loadings in each subscale were 0.40 or above. These loadings revealed that this scale had a strong factor structure.

According to the CFA analysis of this scale, there was no factor loading below 0.30 in all of the sub-dimensions. In the analysis, it was seen that there was no problem in the fit indices and the RMSEA value was below 0.080. According to the results of factor loadings and goodness of fit indices, the relationship between subscales was found to be strong and significant (Figure 1). The literature reveals that, in invalidity analysis, fit index values should be 0.90 or above and the RMSA value should be lower than 0.08.^{18,28} The results of these studies show that the results obtained from our scale were compatible with the literature. The results obtained from our study revealed that the model indices were good and they explained all factors for this scale and all its sub-dimensions. These results showed that the factor analysis of this scale was appropriate and that this scale can be used with its sub-dimensions. The results obtained from explanatory and confirmatory factor analysis revealed the construct validity of this scale.

Reliability

It is seen that the acceptable alpha value for a measurement tool to be reliable is between 0.60 and 0.80.^{17,27} The lowest value obtained from this study was 0.75, and the alpha coefficients in this scale and its sub-dimensions ranged between 0.75 and 0.95. The total scale alpha coefficient was 0.95, which is quite high. Thus, these results pointed to a reliable scale.

Another method which is recommended for reliability analysis is the test-retest method. The ICC test is frequently used in test-retest analysis. This test reveals the ICC.^{24,29} A review of the literature indicated that an ICC of >0.74 is assessed as excellent.^{9,24,29} In this scale, the ICC analysis showed ICC values of 0.92 for subscale F1, 0.896 for subscale F2, 0.842

for subscale F3, 0.809 for subscale F4 and 0.861 for subscale F5; the ICC value for the total scale was 0.938. All of the values were found to be higher than 0.78, indicating that this scale and its subscales had high reliability.

Both the item-total and item-subscale correlation coefficients in this study were higher than 0.30. According to the item analysis, it was seen that the correlation values of the item total scores of the scale and the scale sub-dimensions were not below 0.30 and were between 0.30-0.83. These results show that this scale and its sub-dimensions showed sufficient and acceptable correlation in item analysis.^{19,29} It was seen that this scale adequately measured the concept it aimed to measure and the reliability of the item total scores was high ($p < 0.001$).

The responses of the individuals were therefore deemed reliable, and the items clearly and sufficiently explained the desired topic.

Study Limitations

During the conduct of this study, due to the COVID-19 pandemic, there were issues in reaching some parents. This situation emerged as a limitation of this research.

CONCLUSION

This scale, which was developed to investigate the transition behaviors of babies aged 6-24 months to complementary feeding, is a valid and reliable measurement tool for babies and children in this age range. By using this scale, problems relating to the transition to complementary feeding can be investigated and solutions can be sought for these problems. Thanks to BTCF-S, experimental studies can be carried out and babies and parents can be strengthened. This scale can explore the issues which can arise in infants' feeding behaviors in the transition to complementary feeding and may help professionals set up parental education programs regarding feeding behaviors.

MAIN POINTS

- When the literature was examined, there was no scale which measured the transition to complementary feeding behaviors in 6-24 months babies.
- The scale developed is a valid and reliable instrument which can be employed in identifying the behaviors of 6-24-month babies in the transition to complementary feeding.
- This scale can explore problems which can arise in infants' feeding behaviors in the transition to complementary feeding.
- When parental evaluation is required, this scale allows parents to recognize the feeding behaviors of their baby.

ETHICS

Ethics Committee Approval: Ethical approval was obtained from Zonguldak Bülent Ecevit University Clinical Research Ethics Committee (approval number: 2019-173-16/10, date: 18.12.2019).

Informed Consent: It was obtained.

Authorship Contributions

Surgical and Medical Practices: N.A., M.K., P.M.T., Concept: N.A., M.K., Design: N.A., M.K., P.M.T., Data Collection and/or Processing: N.A., P.M.T., Analysis and/or Interpretation: N.A., M.K., Literature Search: N.A., Writing: N.A., M.K., P.M.T.

DISCLOSURES

Conflict of Interest: No conflict of interest was declared by the authors.

Financial Disclosure: The authors declared that this study had received no financial support.

REFERENCES

1. ESPGHAN Committee on Nutrition; Agostoni C, Braegger C, Decsi T, Kolacek S, Koletzko B, Michaelsen KF, et al. Breast-feeding: A commentary by the ESPGHAN Committee on Nutrition. *J Pediatr Gastroenterol Nutr.* 2009; 49(1): 112-5.
2. Alvisi P, Brusa S, Alboresi S, Amarri S, Bottau P, Cavagni G, et al. Recommendations on complementary feeding for healthy, full-term infants. *Ital J Pediatr.* 2015; 41(1): 36.
3. Brown A, Lee MD. Early influences on child satiety-responsiveness: the role of weaning style. *Pediatr Obes.* 2015; 10(1): 57-66.
4. Taylor RW, Williams SM, Fangupo LJ, Wheeler BJ, Taylor BJ, Daniels L, et al. Effect of a baby-led approach to complementary feeding on infant growth and overweight: a randomized clinical trial. *JAMA Pediatr.* 2017; 171(9): 838-46.
5. Kurtuncu M, Arslan N, Eyupoglu ND. A Baby Friendly Approach to Complementary Nutrition. R. EFE [Editors], Health Sciences Research in the Globalizing World (355-364), ISBN: ISBN978-954-07-4525-1, Bulgaria: St. Kliment Ohridski University Press; 2018.
6. Daniels L, Heath AL, Williams SM, Cameron SL, Fleming EA, Taylor BJ, et al. Baby-Led Introduction to Solids (BLISS) study: a randomised controlled trial of a baby-led approach to complementary feeding. *BMC Pediatr.* 2015; 15(1): 179-94.
7. Arden MA, Abbott RL. Experiences of baby-led weaning: trust, control and renegotiation. *Matern Child Nutr.* 2015; 11(4): 829-44.
8. Panjwani A, Heidkamp R. Complementary Feeding Interventions Have a Small but Significant Impact on Linear and Ponderal Growth of Children in Low- and Middle-Income Countries: A Systematic Review and Meta-Analysis. *J Nutr.* 2017; 147(11): 2169-78.
9. Bektas M, Bektas I, Selekoğlu Y, Kudubes AA, Altan SS, Ayar D. Psychometric properties of the Turkish version of the Emotional Eating Scale for children and adolescents. *Eat Behav.* 2016; 22: 217-21.
10. Carothers C, Gribble K. Infant and Young Child Feeding in Emergencies. *J Hum Lact.* 2014; 30(3): 272-5.
11. Morison BJ, Taylor RW, Haszard JJ, Schramm CJ, Williams Erickson L, Fangupo LJ, et al. How different are baby-led weaning and conventional complementary feeding? A cross-sectional study of infants aged 6-8 months. *BMJ Open.* 2016; 6(5): e010665.
12. Moore AP, Milligan P, Goff LM. An online survey of knowledge of the weaning guidelines, advice from health visitors and other factors that influence weaning timing in UK mothers. *Matern Child Nutr.* 2014; 10(3): 410-21.
13. Tiwari S, Bharadva K, Yadav B, Malik S, Gangal P, Banapurmath CR, et al. Infant and young child feeding guidelines, 2016. *Indian Pediatr.* 2016; 53(8): 703-13.

14. Silverman AH, Berlin KS, Linn C, Pederson J, Schiedermaier B, Barkmeier-Kraemer J. Psychometric Properties of the Infant and Child Feeding Questionnaire. *J Pediatr*. 2020; 223: 81-6.
15. Ek A, Sorjonen K, Eli K, Lindberg L, Nyman J, Marcus C, et al. Associations between Parental Concerns about Preschoolers' Weight and Eating and Parental Feeding Practices: Results from Analyses of the Child Eating Behavior Questionnaire, the Child Feeding Questionnaire, and the Lifestyle Behavior Checklist. *PLoS One*. 2016; 11(1): e0147257.
16. Mallan KM, Daniels LA, de Jersey SJ. Confirmatory factor analysis of the Baby Eating Behaviour Questionnaire and associations with infant weight, gender and feeding mode in an Australian sample. *Appetite*. 2014; 82: 43-9.
17. Hayes AF, Coutts JJ. Use omega rather than Cronbach's alpha for estimating reliability. *Commun Methods Meas*. 2020; 14(1): 1-24.
18. Singh AS. Common procedures for development, validity and reliability of a questionnaire. *Int J Eco Commer Manag*. 2017; 5(5): 790-801.
19. Silva LO, Mendes LMR, Lima POP, Almeida GPL. Translation, cross-adaptation and measurement properties of the Brazilian version of the ACL-RSI Scale and ACL-QoL Questionnaire in patients with anterior cruciate ligament reconstruction. *Braz J Phys Ther*. 2018; 22(2): 127-34.
20. Bedford DS, Speklé RF. Construct validity in survey-based management accounting and control research. *J Manag Account Res*. 2018; 30(2): 23-58.
21. Polit DF, Beck CT. The content validity index: are you sure you know what's being reported? Critique and recommendations. *Res Nurs Health*. 2006; 29(5): 489-97.
22. Polit DF, Beck CT, Owen SV. Is the CVI an acceptable indicator of content validity? Appraisal and recommendations. *Res Nurs Health*. 2007; 30(4): 459-67.
23. Pett MA. *Nonparametric statistics for health care research: Statistics for small samples and unusual distributions*. Sage Publications; 2015.
24. Chen W. Internet-usage patterns of immigrants in the process of intercultural adaptation. *Cyberpsychol Behav Soc Netw*. 2010; 13(4): 387-99.
25. Mortazavi F. Validity and reliability of the Farsi version of Wijma delivery expectancy questionnaire: an exploratory and confirmatory factor analysis. *Electron Physician*. 2017; 9(6): 4606-15.
26. Terwee CB, Bot SD, de Boer MR, van der Windt DA, Knol DL, Dekker J, et al. Quality criteria were proposed for measurement properties of health status questionnaires. *J Clin Epidemiol*. 2007; 60(1): 34-42.
27. Taber KS. The use of Cronbach's alpha when developing and reporting research instruments in science education. *Res Sci Educ* 2018; 48(6): 1273-96.
28. Souza AC, Alexandre NMC, Guirardello EB. Psychometric properties in instruments evaluation of reliability and validity. *Epidemiol Serv Saude*. 2017; 26: 649-59.
29. Nakagawa S, Johnson PCD, Schielzeth H. The coefficient of determination R² and intra-class correlation coefficient from generalized linear mixed-effects models revisited and expanded. *J R Soc Interface*. 2017; 14(134): 20170213.