

Psychometric Properties of the Turkish Version of the Exclusive Breastfeeding Social Support Scale

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ABSTRACT

Objective: This study aimed to evaluate the psychometric properties of the Turkish version of the Exclusive Breastfeeding Social Support Scale, which was designed to determine the social support perceived by mothers of infants aged 0–6 months who use any method of exclusive breastfeeding.

Methods: This methodological research involved 290 mothers and their infants aged 0–6 months. Data were collected using a sociodemographic and breastfeeding-related information form and the Exclusive Breastfeeding Social Support Scale. Thereafter, content and construct validities were assessed; item and confirmatory factor analyses were conducted; and internal consistency was evaluated. The study adhered to the Guidelines for Reporting Reliability and Agreement Studies.

Results: The Turkish version of the Exclusive Breastfeeding Social Support Scale achieved a content validity index of 0.94. The correlations between the item scores and total scale scores ranged from 0.56 to 0.87. The confirmatory factor analysis confirmed the scale's 16-item, three-factor structure, with factor loadings exceeding 0.30 and fit indices above 0.80. The scale demonstrated a Cronbach's alpha coefficient of 0.95.

Conclusions: The Turkish version of the Exclusive Breastfeeding Social Support Scale is proven to be a valid and reliable measurement tool. This scale facilitates the assessment of perceived social support levels among mothers who exclusively breastfeed their infants for the first 6 months after birth.

Keywords: Exclusive breastfeeding, scale, social support, validity, reliability.

1. INTRODUCTION

Globally, breastfeeding is considered one of the top priorities and a fundamental concept of public health (1). It reduces the risk of noncommunicable diseases such as diabetes, childhood asthma, heart disease, and obesity in later life. Additionally, breastfeeding improves birth intervals and reduces the risk of conditions such as postpartum hemorrhage, breast cancer, and cardiovascular disease, thereby enhancing maternal well-being (2). According to the American Academy of Pediatrics, UNICEF, and the World Health Organization, all infants should receive exclusive breastfeeding (EBF) for at least 6 months after birth and continue receiving breast milk and complementary foods for at least 2 years thereafter (3,4). Despite all these benefits, the EBF rate for the first 6 months has yet to reach the desired level. Approximately 48% of infants worldwide are breastfed exclusively for their first 6 months, and 45% continue to breastfeed until 2 years of age (5). In Turkey, the EBF rate is 41% during the first 6 months of life but drops to 34% by the age of 2 years (6).

Research has revealed that several factors must be considered to achieve breastfeeding goals. These factors include cultural, economic, social, and health policies, as well as maternal demographics and psychological characteristics that impact breastfeeding and its sustainability. One of the key factors affecting breastfeeding in this context is social support (7,8). Perceived social support is defined as individuals' belief that other members of their social network will provide them with emotional, informational, and appraisal support when necessary (9). Social support as a social network helps individuals overcome stressful life conditions and problems by providing important psychological resources (10). Individuals can access this support from a variety of sources, including their spouses, families, friends, and healthcare providers (9). These sources play a critical role in the maintenance and establishment of breastfeeding (11). Social support is divided into four supportive behavior groups including emotional, instrumental, informational, and appraisal (7). Emotional support includes providing empathy and other

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emotional support for breastfeeding. Instrumental support involves providing physical support and helping breastfeeding mothers find places to express or feed. Informational support encompasses advice, lessons, and information about breastfeeding. Evaluative support includes offering support and feedback on breastfeeding assessments. A lack of social support is a major barrier to EBF (12).

Social support is complex and multidimensional because it requires the measurement of both the quantity of support given (i.e., the frequency of supportive actions and the number of individuals providing support) and the quality of support received (1). Although there are studies in the current literature demonstrating a positive correlation between breastfeeding and social support (11,13,14), some studies indicate no relationship between them (15,16). The current measurement tools focus on the perceptions of general social support, are poorly adapted to specific contexts, and fail to assess the level of EBF and nutrition-specific support.

It is crucial to use a valid and reliable measurement tool for analyzing each concept. This highlights the need for a valid, reliable, objective, and standardized measurement tool to conduct quality research on social support for EBF in the first 6 months after birth. While valid and reliable data collection tools are limited in the international literature (17), there is no known measurement tool available in Turkey. Consequently, this study aimed to assess the psychometric properties of the Turkish version of the Exclusive Breastfeeding Social Support (EBFSS) Scale.

2. METHODS

2.1. Study Design and Participants

The study was conducted using a methodological approach and adhered to the Guidelines for Reporting Reliability and Agreement Studies (18). Data were collected from mothers utilizing any feeding method who visited the pediatrics polyclinic of a research hospital in a province in eastern Turkey from February to March 2023.

In validity and reliability studies, the sample size should be 5–20 times the number of items in the measurement tool. For an 18-item tool, the target was to reach 10 times as many participants as there are items (19,20). Therefore, data were collected from a total of 290 mothers who volunteered to participate in this study. The study was completed with a sample size of 290 mothers.

2.2. Data Collection Tools

2.2.1. Sociodemographic and Breastfeeding-Related Information Form

A sociodemographic and breastfeeding-related information form with a total of 14 questions regarding the sociodemographic and

breastfeeding-related characteristics of mothers was utilized. The sociodemographic characteristics included age, educational level, employment status, family type, income level, and number of children. Conversely, the breastfeeding-related characteristics were the baby's age and sex, breastfeeding experience, previous breastfeeding training, and feeding habits.

2.2.2. EBFSS Scale

The EBFSS Scale was developed by Boateng et al. (17) to measure the perceived social support for EBF among mothers who use any feeding method for their infants aged 0–6 months. The scale consists of a total of 16 items divided into three subscales: Instrumental Support, Emotional Support, and Informational Support. The Instrumental Support Subscale involves the concrete support received (e.g., “He prepared the meals”) and consists of three items (items 3, 6, and 7). The Emotional Support Subscale encompasses emotional support (e.g., “He believed that I was a good mother”) and consists of eight items (items 1, 2, 5, 8, 9, 10, 15, and 16). The Informative Support Subscale covers useful informational support (e.g., “She showed me how to breastfeed my baby”) and consists of five items (items 4, 11, 12, 13, and 14). All items are scored on a 3-point Likert scale with the following response options: “no help at all” (1 point), “less help than I want” (2 points), and “as much as I want” (3 points). A minimum of 16 points and a maximum of 48 points can be obtained from the scale. A high score indicates a high level of social support. In the original version of the scale, the Cronbach's alpha coefficient was 0.78, 0.85, and 0.78 for the Instrumental, Emotional, and Informational Support Subscales, respectively. In the Turkish version of the scale, the Cronbach's alpha coefficient was 0.85, 0.94, and 0.92 for the Instrumental, Emotional, and Informational Support Subscales, respectively.

2.3. Study Process

2.3.1. Language Validity

During language validation, the EBFSS Scale, originally in English, underwent a two-stage translation process: It was first translated from English to Turkish and then translated from Turkish back to English. In the first stage, three linguists proficient in both Turkish and English translated the scale. In the second stage, the translated Turkish version was consolidated into a single tool by three experts fluent in both languages (three academic nurses holding doctoral titles). Finally, a native English translator proficient in both languages translated the document back into English. A comparison between the translated English scale and the original English scale showed no significant changes in meaning, confirming the language validity of the scale.

2.3.2. Content Validity

The Davis technique was used to assess the content validity of the EBFSS Scale. In this technique, experts rate each item on a scale from 1 to 4, where 1 indicates “not suitable”; 2, “requires major revision”; 3, “requires minor revision”; and 4, “very suitable” (21). In this study, the number of experts who rated the items as 3 and 4 was divided by the total number of experts to calculate the item-level content validity index (I-CVI). At least three expert opinions were required to establish the scale’s content validity (22). No statistical comparison was made for the content validity index; instead, a value of 0.80 was accepted as the criterion (23). After the scale was re-translated, it was compared to the original English version. Subsequently, the Turkish version was reviewed by 11 Turkish field experts specializing in child health and diseases nursing. The final version of the Turkish scale was developed by making necessary adjustments to each item following the Davis technique.

2.3.3. Pilot Study

Following expert consultation, a pilot study was recommended to be administered to a group of approximately 20–30 individuals with similar characteristics to the sample (24). In this study, the scale was initially administered to 30 mothers who volunteered to participate, but these 30 mothers were not included in the final sample. These mothers did not provide any negative feedback regarding the readability, intelligibility, and response process of the scale.

2.3.4. Test–Retest Method

The test–retest method involves applying the same measurement tool to the same group at different periods to determine its consistency and invariance over time (20). Correlation coefficients are calculated between the scores obtained from the tool applied in both periods, and those approaching +1 indicate a high degree of reliability (25). In this study, nicknames and telephone numbers were obtained from mothers who volunteered to participate during the first scale administration. Four weeks later, the scale was readministered to a total of 30 mothers in the target hospital. In the Pearson correlation analysis, a positive and strong relationship ($r=0.794$; $p<.05$) was found between the measurements, with the correlation coefficient falling within the range of 0.60–0.79.

2.4. Data Analysis

The data obtained in this study were analyzed using the Statistical Package for the Social Sciences for Windows version 25.0 and AMOS software version 21. Descriptive

statistics including numbers, means, percentages, and standard deviations were utilized for the data analysis. The reliability of the scale was tested using Cronbach’s alpha and split-half methods. Additionally, both exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) were conducted to determine the construct validity of the scale. Item discrimination was assessed using a 27% top–bottom item analysis. Composite reliability (CR) and average variance extracted (AVE) values were also calculated to assess convergent and divergent validities.

2.5. Ethical Considerations

For the validity and reliability testing of the Turkish version of the EBFSS Scale, permission was obtained from the authors of the original scale via e-mail. In addition, legal and ethical approvals were obtained from the Erzincan Binali Yıldırım University Human Research Ethics Committee (31/08/2022/07-08/10) and the target hospital. Participating mothers were informed about the study, and their written and verbal consents were obtained.

3. RESULTS

3.1. Validity Analyses

3.1.1. Content Validity

Among the experts, the majority of the scale items were rated as either “requires minor revision” or “very suitable.” The I-CVI ranged from 0.80 to 1.0 for each item. After expert opinions were analyzed, a content validity index of 0.94 was obtained.

3.1.2. EFA

Promax rotation was utilized in the EFA. Before the analysis, the Kaiser–Meyer–Olkin (KMO) test was performed to assess the adequacy of the sample size for factorization. The KMO value obtained was 0.951, indicating excellent suitability. Additionally, Bartlett’s test of sphericity yielded a significant χ^2 value [$\chi^2(120)=4129.265$, $p<.01$], further supporting the factorability of the correlation matrix. Ultimately, the resulting measurement tool comprised three factors and 16 items, with no items excluded from the analysis. Based on the findings of the EFA, the adapted scale explained 75.080% of the total variance. Initially, two factors had eigenvalues exceeding 1. However, when the scale was forced into three dimensions, the eigenvalues returned to their original levels, which better aligned with the original distribution (Table 1).

Table 1. Demographic characteristics of the participants

		n	%
Age (Year)	18-24	54	18.6
	25-34	186	64.1
	35-44	50	17.2
Education Status	Primary school	46	15.9
	Middle school	49	16.9
	High school	87	30.0
	University and above	108	37.2
Working status	Working	52	17.9
	Not working	238	82.1
Income status	Income more than outgoing	86	29.7
	Income equals expense	181	62.4
	Income less than expenses	23	7.9
Family Type	Nuclear family	267	92.1
	Extended family	23	7.9
Children Number	1	109	37.6
	2	108	37.2
	3	50	17.2
	4 and above	23	7.9
Type of birth	Normal delivery	142	49.0
	Cesarean delivery	148	51.0
Infant's gender	Female	117	40.3
	Male	173	59.7
Infant's Age	1	80	27.6
	2	76	26.2
	3	48	16.6
	4	37	12.8
	5	25	8.6
	6	24	8.3
Breastfeeding status of another infant	Yes	167	57.6
	No	123	42.4
Breastfeeding education	Yes	100	34.5
	No	190	65.5
Nutrition Type	Exclusive Breastfeeding	167	57.6
	Breastfeeding and formula	102	35.2
	Formula	21	7.2
		X±SD	
Week of birth		38.53±1.07	
Birth weight		3157.51±423.88	
Exclusive Breastfeeding Duration		6.00±1.69	

3.1.3. CFA

In the CFA, the scale exhibited significance at a p-value of 0.000, demonstrating a relationship among the 16 items and the three-factor structure of the scale. Covariance between errors of the same factor was observed in the model. In the analysis of the goodness-of-fit indices of the scale, the χ^2/df was 2.286, and the root mean square error of approximation (RMSEA) was 0.067. Additionally, in the three-factor CFA, the factor loadings of all subscales were >0.30, indicating satisfactory goodness-of-fit indices. These

indices included the goodness-of-fit index (GFI), normed fit index (NFI), relative fit index (RFI), comparative fit index (CFI), and incremental fit index (IFI), all of which were >0.90. The RMSEA was <0.080 (Table 2).

3.2. Reliability Analyses

Based on the CFA results of the three-factor model, Factor 1 exhibited factor loadings ranging from 0.78 to 0.90; Factor 2, from 0.56 to 0.98; and Factor 3, from 0.72 to 0.89 (Figure 1 and Table 3).

Table 2. Exploratory Factor Analysis Results of Exclusive Breastfeeding Social Support Scale

Items	Factor 1	Factor 2	Factor 3
Q16		0.915	
Q2		0.889	
Q10		0.854	
Q9		0.815	
Q5		0.795	
Q8		0.783	
Q1		0.743	
Q15		0.649	
Q13			0.996
Q12			0.921
Q14			0.768
Q4			0.732
Q11			0.610
Q3	0.952		
Q7	0.828		
Q6	0.755		
Eigenvalue	0.880	9.852	1.280
Rate of Explained Variance	5.503	61.578	7.999
<i>KMO =0.951 X²(120) = 4129.265; Bartlett Sphericity Test (p) = 0.000 Rate of Total Explained Variance=75.080</i>			

3.2.1. Item–Total Test Correlation

The item–total test correlation coefficients for the responses to all scale questions varied from 0.561 to 0.876 (Table 3).

Table 3. Findings on Confirmatory Factor Analysis (GU)

Index	Perfect Fit Criteria	Acceptable Fit Criteria	After Modification
χ^2/SD	$0 \leq \chi^2/df \leq 3$	$3 \leq \chi^2/df \leq 5$	2.286
RMSEA	$0.00 \leq RMSEA \leq 0.05$	$0.05 \leq RMSEA \leq 0.08$	0.067
SRMR	$0.00 \leq SRMR \leq 0.05$	$0.05 \leq SRMR \leq 0.08$	0.031
CFI	$0.95 \leq CFI$	$0.85 \leq CFI$	0.969
GFI	$0.90 \leq GFI$	$0.85 \leq GFI$	0.912
AGFI	$0.90 \leq AGFI$	$0.85 \leq AGFI$	0.879
IFI	$0.90 \leq IFI \leq 1.00$	$0.80 \leq IFI$	0.969
TLI	$0.90 \leq TLI$	$0.80 \leq TLI$	0.962
NFI	$0.90 \leq NFI$	$0.80 \leq NFI$	0.946

Chi-square/ Degrees of Freedom (χ^2/SD) ; Root Mean Square Error of Approximation (RMSEA); Comparative Fit Index (CFI); NNFI (TLI): Normed Fit Index; Goodness of Fit Index (GFI); Adjusted Goodness of Fit Index (AGFI)

Table 4. Reliability Analysis of the Exclusive Breastfeeding Social Support Scale

Factor	Item	Factor Load	Item-total test correlation	AVE	CR	Cronbach's Alpha if Item Deleted	Cronbach's Alpha
Factor 1	Q3	0.563	0.561	0.70	0.87	0.944	0.856
	Q6	0.982	0.827			0.704	
	Q7	0.910	0.820			0.707	
Factor 2	Q1	0.725	0.694	0.67	0.94	0.939	0.940
	Q2	0.893	0.876			0.927	
	Q5	0.839	0.808			0.931	
	Q8	0.790	0.761			0.934	
	Q9	0.842	0.817			0.931	
	Q10	0.848	0.828			0.929	
	Q15	0.851	0.812			0.931	
	Q16	0.719	0.715			0.938	
Factor 3	Q4	0.869	0.821	0.71	0.92	0.901	0.923
	Q11	0.896	0.828			0.901	
	Q12	0.779	0.753			0.916	
	Q13	0.814	0.798			0.906	
	Q14	0.842	0.808			0.903	

The AVE value for Factor 1 was 0.70; Factor 2, 0.67; and Factor 3, 0.71. Conversely, the CR value for Factor 1 was 0.87; Factor 2, 0.94; and Factor 3, 0.92. In the 16-item analysis of the scale, the item–total test correlation coefficients were found to vary from 0.56 to 0.87 (Table 3).

The reliability of the Turkish version of the scale was 0.955. The alpha coefficient for Factor 1 was 0.85; Factor 2, 0.94; and Factor 3, 0.92.

For the split-half reliability analysis of the scale, the items were divided into two halves based on their odd and even row numbers. The correlation coefficient between the two halves was calculated to be over 0.70 for each measurement tool. Specifically, the correlation coefficient between the two halves was 0.931; the Spearman correlation coefficient was 0.965; and the Guttman split-half coefficient was 0.964 (Table 5).

Table 5. Split-half reliability of the scale

Cronbach's Alpha	Half 1= Q1, Q3, Q5, Q7, Q9, Q11, Q13, Q15,	0.899
	Half 2= Q6, Q2, Q8, Q10, Q16, Q4, Q12, Q14,	0.924
Correlation between the two halves		0.931
Spearman-Brown coefficient		0.965
Guttman Split-Half coefficient		0.964

4. DISCUSSION

In countries where traditional practices are prevalent, the breastfeeding behaviors of mothers are often influenced by their families, close social circles, and religious communities. While breastfeeding is a common practice in these countries, it is also typical to introduce other foods and liquids before the recommended age of 6 months. Despite receiving substantial support from their social networks, mothers may encounter pressure from the same individuals to introduce complementary foods early, thereby disrupting EBF. In Turkey, where traditional practices are prominent, breastfeeding is widely practiced, but EBF during the first 6 months of life is not as commonly observed (17,26). Given that perceived social support in the first 6 months is a crucial factor influencing breastfeeding behavior, there is a need for a scale to assess support during breastfeeding specifically within this timeframe (11,13,14). Hence, this research was undertaken to establish the validity and reliability of the Turkish version of the EBFSS Scale, developed to address this existing gap. The findings of the study indicate that the Turkish version of the scale exhibits acceptable validity and reliability.

A newly developed or adapted measurement tool should meet validity and reliability criteria (27,28). A crucial initial step in scale adaptation studies is translating the original scale into the language of the target society. The I-CVI should typically exceed 0.80 to ensure agreement between expert opinions (29). In this study, the I-CVI of the scale was 0.94. Similarly, an adaptation study conducted in Iran reported an I-CVI of 0.98 (30). Based on the I-CVI, expert consensus confirmed that the scale accurately measured the intended subject, thereby establishing the content validity of the scale.

The KMO test was utilized to assess the adequacy of the sample size for factorization. According to the literature, conducting a factor analysis necessitates a significant Bartlett's test of sphericity value and a KMO value of at least 0.60 (10, 31). In this study, the KMO value was determined to be 0.951, while in the adaptation study conducted in Iran, the value was 0.88 (30). Bartlett's test of sphericity revealed a significant χ^2 value [$\chi^2(120)=4129.265$, $p<0.01$], indicating that the items had a multivariate normal distribution. Therefore, the sample size and dataset were deemed suitable for the factor analysis.

For the number of factors to be determined, the eigenvalue must be at least 1 (31,32). In the present study, the scale was constrained into three dimensions to better fit the original distribution. Consequently, no items were excluded, and

the scale consisted of 16 items across three factors. The three-factor scale explained 75.080% of the total variance. Conversely, it explains 66% of the total variance in the original version of the scale and 59.26% in an adapted Iranian version of the scale (17,30). Multidimensional scales should have an explanation variance of at least 40%, and the higher the explanation variance, the stronger the construct validity (31,32). In this study, the total variance explained by the scale exceeded 50%, consistent with previous reports. This high level of total variance confirmed the construct validity of the scale.

The EFA of the three-factor model in the present study revealed factor loadings ranging from 0.61 to 0.99. Items with factor loadings exceeding 0.30 were considered suitable for the structure, confirming the validity of the structure. Items with factor loadings below this threshold were considered for exclusion from the scale (33). In the original scale, factor loadings ranged from 0.22 to 0.90, and items with factor loadings below 0.30 were removed from the scale (17). In the adaptation study conducted in Iran, factor loadings ranged from 0.45 to 0.88 (10). In this study, the EFA revealed a 16-item, three-factor structure: informative, emotional, and instrumental support. The factor loadings obtained from each subscale were >0.30 , indicating that the scale had a robust factor structure. This finding is consistent with previous reports that support a three-factor structure similar to that of the Hughes Breastfeeding Social Support Scale (34). In addition, the 16-item EBFSS Scale offers the advantage of a shorter administration time compared to the 30-item Hughes Breastfeeding Social Support Scale.

The CFA was conducted on the model based on the dimensions identified in the EFA. The adequacy of the theoretical structure proposed by the CFA for explaining the observed data was evaluated (35). The CFA revealed that the structural equation modeling results of the scale were significant ($p=.000$), indicating a strong relationship between the 16 items and the three-factor structure of the scale. Covariance was established between errors of the same factor in the model. In the three-factor CFA, the factor loadings of all subscales were found to be >0.30 . The goodness-of-fit indices including the GFI, NFI, RFI, CFI, and IFI were all >0.90 , while the RMSEA was <0.080 . Additionally, the model demonstrated a perfect fit with a χ^2/df of 2.286. In their study, Boateng et al. (17) reported overall goodness-of-fit indices of >0.90 and an RMSEA of <0.08 . Mashayekh-Amiri et al. (30) examined the three-factor structure found in their EFA using a CFA and found that the model fit the data well. In this study and other studies, the CFA results are compatible with the criteria stated in the literature. The CFA indicated that the data aligned with the model, confirming the three-factor structure and the association of the subscales with the scale. Moreover, the items within each subscale adequately represented their respective factors. Both EFA and CFA results in this study support the construct validity of the scale, suggesting that it is a valid measurement tool.

Reliability analyses are conducted to assess whether the items on a scale are internally consistent and measure the same construct. Cronbach's alpha coefficients are used for this purpose, with values ranging from 0 to 1. A coefficient of 0.00–0.40 indicates low reliability; 0.40–0.60, fair reliability; 0.60–0.80, good reliability; and 0.80–1.00, excellent reliability (36). In the current study, the Cronbach's alpha coefficient for the EBFSS Scale was 0.955, while that for its subscales ranged from 0.856 to 0.940. In their study, Boateng et al. (17) calculated a total Cronbach's alpha coefficient of >0.70 for their scale. In the study by Mashayekh-Amiri et al. (30), the total Cronbach's alpha coefficient for their scale was 0.92, while that for the subscales varied from 0.79 to 0.82. The scale in the present study is similar to the original version and the adapted Iranian version and has strong internal consistency.

The study has several limitations. First, the validity and reliability of the scale were tested solely on mothers who sought care at a hospital in a specific province in Turkey, limiting the generalizability of the results. Second, the study was conducted in a single location with a relatively small sample size. Third, the scale used relied on self-report measures.

5. CONCLUSIONS

In conclusion, the EBFSS Scale, comprising 16 items and three subscales, is a valid and reliable measurement tool for evaluating the level of social support for EBF perceived by mothers of infants aged 0–6 months in Turkey. This tool can be utilized by professionals to assess the perceptions of social support among mothers with infants aged 0–6 months and by researchers to facilitate cross-cultural comparative studies. Mothers often encounter various challenges during breastfeeding. Given the established relationship between perceived social support and breastfeeding, nurses are poised to play a pivotal role in identifying mothers lacking adequate social support and in enhancing breastfeeding attitudes and behaviors. The initial step in assisting mothers involves assessing their situation. This study provides Turkish pediatric and public health nurses, pediatricians, and other healthcare professionals with a valid and reliable tool for evaluating the perceived level of social support for EBF. By using this scale, nurses can assess the level of informative social support and develop community-based interventions. Moreover, the scale can be instrumental in formulating policies aimed at enhancing support for EBF.

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Acquisition of data for the study: GA, SK

Analysis of data for the study: GA, SK

Interpretation of data for the study: GA, SK

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