Original
ISSN 2413-0516

Psychometric Properties of the Arabic Version of Interactive Breastfeeding Scale

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(Submitted: 05 September 2024 – Revised version received: 21 September 2024 – Accepted: 10 October 2024 – Published online: 26 October 2024)

Abstract

Objective: To assess factors influencing mother-child interaction during breastfeeding and validate the Arabic version of the Interactive Breastfeeding Scale (IBfS).

Methods: A descriptive (cross- sectional study design) was carried out to evaluate the factors that interfere with the mother-child interaction during breastfeeding. A non-probability 'purposive sample' consists of (377) mothers who attending primary health care centers in Baghdad City. The study was started at January/2024 to July/2024.

Results: The Arabic version of the Interactive Breastfeeding Scale reveals strong psychometric properties with Cronbach's Alpha values ranging from 0.71 to 0.86. Significant correlations were found between the scale and factors like Mother's Perspective ($r = .886$) and Child Perspective ($r = .661$). The findings highlight the importance of mother and child-related factors in breastfeeding experiences.

Conclusions: The Arabic version of the Interactive Breastfeeding Scale (IBfS) demonstrates strong reliability and validity, making it a robust tool for assessing breastfeeding dynamics. Key factors such as Mother's Perspective and Child Perspective show significant correlations with IBfS, underscoring their critical role in the breastfeeding experience. The scale's psychometric properties support its use in diverse settings, providing valuable insights into mother-child interactions during breastfeeding.

Keywords: Psychometric properties; interactive breastfeeding; and mother-child interaction.

Introduction

Breastfeeding is a complicated phenomenon that is influenced by a number of factors, a number of instruments are used to test, evaluate, or gather particular data on the phenomenon, such as the assessment of mother-infants bounding, the evaluation of premature infants; as well as the abilities and characteristics of a construct like self-effectiveness and mother confidence in breastfeeding. The percentage of women who breastfeed is still not at the internationally coveted level. There is more to breastfeeding than merely giving breast milk to a child.[1,2] The complicated phenomenon of breastfeeding may be influenced by biological, psychological, Political, social, cultural, and economic factors all affect this, which is why the study was carried out to analyze the elements that obstruct the interaction between a mother and her infant.[3,4]

Breastfeeding lowers mother death from breast cancer as well as the mortality rate from infectious diseases that affect children under five. Breastfeeding mothers and their infants have these and many other highly advantageous predispositions that are further strengthened by the early initiation of breastfeeding. Consequently, it makes sense that the World Health Organization (WHO) and the United Nations Children's Fund (UNICEF) is advised to initiate breastfeeding within the first hour of giving birth. It is the foundation of the optimal nursing technique, which is used by breastfeeding infants for the first hour after birth.[5,6]

Although breastfeeding has been shown to have positive effects on nutrition and physical health, it also has psychological consequences on both mothers and their infants.[7,8] Breastfeeding affects the infant's development, cognitive abilities, as well as socio-emotional growth. There is evidence showing that breastfeeding affects maternal care, stress, mood, and affect. In humans, breastfeeding is undoubtedly the "gold standard" food source in the first months of postnatal life.[9,10] The World Health Organization and the American Academy of Pediatrics advises having exclusive breastfeeding for at least six months, which is characterized as the exclusive intake of breast milk. Furthermore, according to studies, breastfeeding is more than just a way for an infant to get nutritions because it's a vital source of meal at the breast, but also has profound and enduring impacts on behavior, cognitive, mothers' and children's mental health.[11–13]

Early postpartum breastfeeding difficulties have been shown to have a negative impact on breastfeeding success. Concerns about breastfeeding, such as soreness in the nipples, difficulty latching, and the impression of insufficient milk production in the first week after giving birth, were quite common and connected to a nine-fold increased risk of stopping earlier than anticipated in women who are primiparous mothers.[14,15]

However, there are certain issues that arise in the early postpartum period that have a negative impact on breastfeeding and sucking during this time. Consequently, the prompt identification and treatment of breastfeeding issues seen in the postpartum period is critical to the health of both mothers and infants.[16]

Many studies have been conducted worldwide to investigate the obstacles and factors that influence exclusive breastfeeding (EBF). Taking the socio-cultural dynamics into account.[17] Challenges with exclusive breastfeeding arise at the mother, infants, family, and health care system, as well as locally and nationally.[18,19] The difficulties with EBF practice consist of: breast engorgement, sore or cracked nipples, inadequate breast milk production, inadequate breastfeeding support from others, discomfort and rejection of breastfeeding in public limited maternity leave durations, challenges related to society and healthcare providers, juggling emotional stress and other maternal tasks with breastfeeding. Several literatures

have also identified certain characteristics that predict EBF practice. These include infant's age, mother's age, marital status, degree of formal education, and employment.[20,21]

The mother's employment status is a significant factor that influences how long the child breastfeeds. The health, psychological, nutritional, immunological, and financial advantages of breastfeeding are well recorded. According to UNICEF and the World Health Organization, for at least six months, only breastfeed infants. Individuals from diverse backgrounds contribute to the development of breastfeeding. When lawmakers, employers, company owners, and health care professionals when family and community people collaborate, they can increase the number of women who initiates breastfeeding and how long they keep up the breastfeeding.[22,23]

The type of anesthesia used during the cesarean section may also have an impact on the attachment between the mother and the infant. Breastfeeding can help in promote mother-infant bounding. For many women, breastfeeding was the most healing experience of their lives following the C-section.[24]

Methods

Study Design and Setting

A descriptive (cross-sectional study design) was carried out to evaluate the factors that interfere with mother-child interaction during breastfeeding. The study was started at January /2024 to July/ 2024, an official permission obtained from the Ministry of Health, for seven primary healthcare centers in Baghdad City.

Study Population and Recruitment

A non-probability 'purposive sample' consists of (377) mothers who attending primary health care centers in Baghdad City, the mother participated after having given informed consent and agreed to participate in this study. The study protocol was approved by the Scientific Research Ethical Committee, College of Nursing, University of Baghdad, Baghdad, Iraq (Ref.8 number:16 January 2024). Furthermore. Also, approval was obtained from Iraqi Ministry of Health/ training and developmental department, and approval from the primary health care centers in which the study was conducted. The researcher informed the women about their rights of voluntarily participation, withdraw at any time, confidentiality, and privacy. Women who agreed to participate were asked to sign the consent form. Study ethical considerations including the nature and aims of the study, voluntary participation, the right to withdraw from participation, the protection of confidentiality and privacy of the informants, the use and publication of the study results, the storage of data, and benefits of the study were explained in writing to candidates. This information was conveyed in the human ethics application form. It was also verbally reinforced before the conduction of the interview.

Data Collection

The Interactive Breastfeeding Scale is the most concrete or empirical level of the "Interactive Breastfeeding Theory", structure of the connection of the affirmative (items) of the Scale to the concepts derived from the Interactive Breastfeeding Theory is what makes it possible to direct the actions to the determining factors of breastfeeding change. The scale has 58 items or statements that are related to the concepts of the Interactive Breastfeeding Theory. With minor modifications on some questions to be compatible with socio-demographic nature of the Iraqi community, the total number of all questions is (64). The questionnaire consists of two main parts the first one include five questions (general information about the mothers and their infants) and the second part consist of (10) factors about interactive breastfeeding scale including (1.Woman's Perception 2. Child's Perception 3.Woman's Biological Conditions 4. Child's Biological Conditions 5.Woman's Body Image 6. Space for Breastfeeding 7. Mother's Role 8. Organizational Systems for the Protection, Promotion and Support of Breastfeeding 9. Family and social authority and finally 10. Woman's Decision Making) the total numbers of interactive breastfeeding scale questions are (58). The experts observes whether the items are understandable to the population to be reached from the lowest stratum to the sphere of greatest ability and judges whether the proposed item conforms to the theoretical concept. Five experts, those who met the following inclusion criteria were considered: being academic and researchers, having experience of at least 10 years to make the judges.

Data Analysis

This study's sample size was calculated using the formula: n = Z2pq/d2. Here, n is the sample size. Considering the confidence interval at 85% (Z = 1.96), population proportion at 50% (P = 0.5), and margin of error at 5% (d = 0.05%); the calculated sample size was 377. The sample size was calculated with OpenEpi (Open Source Epidemiologic Statistics for Public Health).[25] The validated questionnaire was distributed among 73 mothers to test its reliability. Cronbach's alpha was 0.788 which indicates a consistent reliability of the questionnaire. The time for collecting samples from 8:30 am to 2:30 pm daily during official working days and each interview takes about 30 minutes with each woman.

The scale used in the study was rated on a 5-point Likert scale to measure mother-child interactions during breastfeeding. The ratings ranged from 1 to 5, where 1 meant "never," 2 meant "seldom," 3 meant "sometimes," 4 meant "frequently," and 5 meant "always." This scale allowed participants to indicate how often they experienced specific interactions, providing detailed insights into breastfeeding practices. This method ensured a comprehensive understanding of respondents' experiences and facilitated accurate statistical analysis for reliability and validity assessments.

For the purpose of analyzing data, the Statistical Package for Social Science (SPSS-version 24.0 and AMOS). Both descriptive and inferential statistical methods were employed to evaluate factors influencing mother-child interactions during breastfeeding. Descriptive statistics, including counts, percentages, means, standard deviations, skewness, and kurtosis, were used to provide a comprehensive overview of the data's distribution and central tendencies. For reliability assessment, Cronbach's α and McDonald's ω were calculated to gauge internal consistency, while the Intraclass Correlation Coefficient (ICC) was used to assess the stability of the measures. Confirmatory Factor Analysis (CFA) was conducted to validate the underlying factor structure of the scales, ensuring they accurately reflected the theoretical constructs. Bivariate correlation analysis was performed to explore the relationships between the Interactive Breastfeeding Scale (IBfS) and its sub-factors, highlighting significant associations among

key variables. This combined approach ensured a thorough examination of the measurement tool's psychometric properties and the dynamics of breastfeeding interactions.

Discussion

According to the studies, many mothers plan to breastfeed and may even attempt to do so at the beginning, but they may not always continue to breastfeed their infant exclusively for the first six months of life. The literature lists a number of obstacles, such as going back to work, not having enough support from partners and lack of support from health care providers, as well as body challenges.[21,26]

The employment status of the woman is a significant factor that influences how long the infant breastfeeds. The health, psychological, immunological, and financial advantages of breastfeeding are well recorded. Individuals from many backgrounds contribute to the promotion of breastfeeding. When politicians, employers, community and family members, and health care providers collaborate, they can raise the proportion of breastfeeding mothers. As well as how long they keep breastfeeding. Women have long been employed, particularly in their reproductive years. It has always been difficult to leave their employment and caring of their infants.[27]

Regarding the family and husband's role; some of women do not have the independency to make the decision to breastfeed or stop it. The husband or the women's mother in law also intervenes in this decision. Some husbands are supportive of the breastfeeding mother and some do not care, but Iraqi society in general supports and encourages breastfeeding, even if it seems to be declining because of the mother's job which it makes them stop breastfeeding. The family is the primary decision-maker (97.2%), with the doctor having a merely 2% influence in that area and a 21.2% advisory role for artificial feeding. Further research revealed that there is a reduction in breastfeeding among the three generations under study (98.4%, 48%, and 100%); which indicate about 52% drop in breastfeeding. Many of Iraqi mothers do not maintain exclusive breastfeeding related to return to their employment, as the employed mother cannot continue breastfeeding because the policies in Iraq do not support breastfeeding and do not provide places or working hours that suit the breastfeeding mother. Therefore, most women stop breastfeeding when their maternity vacation end and they come back to work.[28] Furthermore, a lot of women find it challenging to balance the tasks of wife and mother at the same time, particularly if their spouses don't support them. This makes it more difficult for them to perceive changes in their bodies. In interpersonal interactions and social positions. Women are expected to act in a certain way as mothers when they begin to assume the role of mother in society, breastfeeding becomes one of their obligations as well as the mother's part, as recommended by the Interactive Theory of Breastfeeding impacts the woman's body image and experiences interference from it. As a result, when a woman takes on the role of mother, the changes brought about by the birth of a child force her to adopt a new condition of herself and in her connections with others, which results in a shift in her posture and behavior. Subsequently, the whole metamorphosis of the self-image.[29]

In addition to the biological aspect of feeding the infant, breastfeeding incorporates the ways in which a woman's beliefs and behaviors toward her body may influence her choice to engage in this behavior. More specifically, what elements are connected with the choice of continuing or discontinuing breastfeeding? Could having favorable body image (A good body image, for instance). According to some women, they're worried that will breastfeeding change the contour of their breasts? Women who have increased bodily anxiety could be particularly concerned about this result and, as a result, prevent or reduce the length of breastfeeding. Concerns about weight may be related to how mothers feed their babies. In an attempt to reclaim control over their body size and shape during the postpartum period, women who are concerned about their weight may prioritize dieting in order to lose weight more quickly.[30,31]

Women have specific experiences with body sensations during the postpartum phase, which is a one-time event that each woman experiences in a different and distinctive way.The awareness of the stretch marks, flaccidity, altered belly, and alteration in the dimensions and form of the breasts, as well as the existence of negative emotions on the new perception that impacts women's sexuality and self-confidence. According to the Interactive Theory of Breastfeeding, a woman's body image may be impacted by the biological changes her body goes through to get ready for breastfeeding, which could potentially affect her decision to breastfeed. Studies indicate that the body Changes in the body as a whole and in the contour of the breasts might be viewed as either favorable or No. When these changes are seen unfavorably, women experience discomfort with their relationship, leading to negative emotions and body shaming.[32,33]

EBF level was less than 40% in 2011 and 37% in 2012. By the provisions of the sixty-fifth World Health Organization (WHO) session in 2012, this should reach 50% in 2025. According to a systematic review, Iranian EBF level is 53%. A 2021 cross-sectional study in East Azerbaijan province, Iran showed that 72% of infants are exclusively breastfeed. WHO strongly recommends starting breastfeeding within the first hour after birth, EBF for 6 months and continuing breastfeeding still age two. A crucial strategy to reach such a goal is identifying factors affecting breastfeeding such as the mother's age, race, education level, smoking, obesity, type of delivery, returning to the workplace , breastfeeding self-efficacy, and the received social support.[34]

A study was conducted on 50 primary health care physicians in Ramadi city, Iraq, in 2001 to assess their knowledge and identify misperceptions about breastfeeding. Basic knowledge about the main processes of breastfeeding was good (when to start feeding, frequency of feeding, relactation, importance of psychological factors), but there were deficiencies in their ability to deal with some practical problems related to breastfeeding. Only 64% would advise continuation of breastfeeding when a lactating mother discovers that she is pregnant, 38% of them thought a mother's ability to breastfeed was related to breast size and only 66% knew when to start feeding after caesarean section. Steps for improving the knowledge and training are addressed.[35]

Conclusion

The Arabic version of the Interactive Breastfeeding Scale (IBfS) demonstrates strong reliability and validity, making it a robust tool for assessing breastfeeding dynamics. Key factors such as Mother's Perspective and Child Perspective show significant correlations with IBfS, underscoring their critical role in the breastfeeding experience. The scale's psychometric properties support its use in diverse settings, providing valuable insights

into mother-child interactions during breastfeeding. It is recommended to implement the Arabic Interactive Breastfeeding Scale (IBfS) in clinical settings to assess and support breastfeeding practices. Targeted interventions should focus on enhancing mother and child perspectives, given their strong correlation with breastfeeding experience. Educational programs for mothers to improve practices and perceptions. Further research is needed to explore the scale's applicability across different populations and to understand less impactful factors.

Ethics Approval and Consent to Participate

The study protocol was approved by the Scientific Research Ethical Committee in the College of Nursing at the University of Baghdad (approval number 8: January 16, 2024). In addition, permission was obtained from the Iraqi Ministry of Health/Training and Developmental Department to collect data from primary healthcare centers in six Arabic countries. Ethical considerations, including the nature and aims of the study, voluntary participation, right to withdraw from participation, protection of confidentiality, privacy of the informants, use and publication of the study results, storage of data, and benefits of the study, were explained to the participants by the researcher. This information was conveyed in the human ethics form and verbally reinforced before data collection. The researcher informed the women about their rights of voluntarily participation, withdraw at any time, confidentiality, and privacy. Women who agreed to participate were asked to electronic sign the consent form. This information was conveyed in the human ethics application form. It was also verbally reinforced before the conduction of the interview.

Consent for Publication

The author confirm that she agree to publish my article in international breastfeeding journal.

Availability of Data and Materials

Data supporting the conclusions of this work are included within the article. Information labeled as data not shown can be supplied by the corresponding author. However, the datasets analyzed during the current study are not publicly available to ensure that the individual privacy of all women is safeguarded.

Competing Interests

The author declare that she have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Authors' Contributions-Provide Individual Author Contribution

Hawraa Hussein Ghafel: Writing – original draft, Supervision, Resources, Project administration, Investigation, Funding acquisition, Data curation, Conceptualization.

Acknowledgements

The author appreciate the efforts and dedication of a Professor Dr. Sadeq Abdul Hussein Hassan, a professor Dr. Qahtan Qassem Mohammed (faculty members at College of Nursing, University of Baghdad) for their help. Without the women's cooperation and assistance, the data could not have been gathered. The author greatly value their participation and cooperation.

Results

The findings in table 1 reveals that average age of mothers is 29.2 ± 6.5 years, 53.6% of them seen within age group of 25–34 years old. The highest percentage regarding level of education refers to bachelor degree among 22.8% of mothers followed by 22.3% of those who graduated from secondary schools. The

Table 1 **Socio-demographic Demographic Characteristics of Mothers and their Children**

Characteristics		No	%
Mother's Age (years) M±SD = 29.2 ±6.5	15–24	88	23.3
	25–34	202	53.6
	35–44	83	22
	45–54	3	.8
	55–64	1	.3
	Total	377	100
Level of education	Read and write	19	5
	Primary school	34	9
	Intermediate school	61	16.2
	Secondary school	84	22.3
	Diploma	77	20.4
	Bachelor	86	22.8
	High Diploma	7	1.9
	Master	7	1.9
	Doctorate	2	.5
	Total	377	100
Occupation	Housewife	179	47.5
	Governmental employee	170	45.1
	Student	28	7.4
	Total	377	100
Number of children	1–3	294	78
	4–6	80	21.2
	7 or more	3	.8
	Total	377	100
Birth order of children	Firstborn	64	17
	Second	119	31.6
	Third	113	30
	Fourth	60	15.9
	Fifth or more	21	5.5
	Total	377	100

No: Number, %: Percentage, M: Mean, SD: Standard deviation

occupational status refers that 47.5% of mothers are housewives while 45.1% are governmental employee. The number of children refers to 1–3 among 78%, 31.6% of children are second born.

The table presents descriptive statistics for various factors. Most variables, especially within "Mother's Perspective" and "Breastfeeding Space," show generally positive perceptions with negative skewness, indicating a tendency towards higher ratings. Variability is moderate to high across factors, with kurtosis values indicating a mix of peaked and flat distributions. Notably, some variables like "Mother's Decision Making" and "Mother's Body Image" show significant variability and extreme kurtosis, reflecting diverse perceptions and distribution shapes.

This table displays the reliability and consistency metrics for the ten factors related to mother-child interaction during breastfeeding show overall strong performance. Cronbach's Alpha (α) values range from 0.71 to 0.86, McDonald's Omega (ω) values range from 0.71 to 0.82, and Intraclass Correlation Coefficient (ICC) values range from 0.74 to 0.89. Notably, factors such as Mother's Role (MoR) and Mother's Body Image (MoBI) demonstrate particularly high reliability with Cronbach's Alpha and ICC values of 0.86 and 0.83, respectively. Family and Social Power (FSP) exhibit an exceptionally high ICC of 0.89, indicating excellent reliability. These findings suggest that the factors measured are dependable and consistent, supporting their use in evaluating the dynamics of mother-child interaction during breastfeeding.

Table 2. **Descriptive Results of Interactive Breastfeeding Scale (IBfS)**

Variables	Mean	SD	Skewness	Kurtosis	Variables	Mean	SD	Skewness	Kurtosis
MoP1	4.68	.591	−1.872	3.080	ChBS1	3.70	1.159	−.557	−.357
MoP2	3.79	.994	−.146	−1.114	ChBS2	3.79	1.026	−.199	−.960
MoP3	3.90	1.064	−.603	−.520	ChBS3	3.77	1.049	−.442	−.450
MoP4	4.59	.667	−1.693	3.021	ChBS4	2.68	1.171	.425	−.403
MoP5	4.01	1.208	−.944	−.142	MoBI1	3.42	1.246	−.273	−.750
MoP6	3.50	1.192	−.256	−.688	MoBI2	3.31	1.060	.007	−.516
MoP7	3.62	1.159	−.512	−.488	MoBI3	3.23	1.273	−.227	−.883
MoP8	3.75	1.199	−.571	−.678	MoBI4	1.36	.813	2.717	7.434
MoP9	4.01	1.229	−1.004	−.046	BFSp1	2.59	1.350	.579	−.816
MoP10	3.78	1.212	−.570	−.695	BFSp2	4.72	.722	−2.881	8.388
MoP11	3.86	1.106	−.531	−.721	BFSp3	1.61	.905	1.636	2.361
MoP12	3.58	1.185	−.236	−.1.001	BFSp4	4.40	1.040	−1.659	1.710
MoP13	3.56	1.154	−.247	−.777	BFSp5	3.63	1.171	−.609	−.324
MoP14	3.50	1.201	−.441	−.542	MoR1	4.36	1.019	−1.787	2.726
MoP15	3.48	1.011	−.264	−.239	MoR2	3.48	1.013	.278	−1.009
MoP16	3.94	1.106	−.651	−.4.22	MoR3	3.49	1.084	−.070	−.813
MoP17	4.19	2.835	15.337	276.150	MoR4	3.96	1.137	−.750	−.530
MoP18	3.80	1.039	−.295	.−.861	MoR5	2.99	1.411	.071	−1.205
MoP19	3.52	1.072	−.534	−.172	SPPBf1	3.62	1.278	−.457	−.893
MoP20	3.22	1.204	−.164	−.761	SPPBf2	2.97	1.149	−.133	−.637
ChP1	4.28	.919	−1.236	1.235	SPPBf3	3.57	1.197	−.256	−1.072
ChP2	3.70	.996	−.263	−.450	SPPBf4	3.21	1.282	−.070	−1.009
ChP3	4.16	1.024	−1.264	1.060	SPPBf5	3.82	1.097	−.495	−.667
ChP4	3.67	1.139	−.446	−.557	SPPBf6	2.44	1.315	.604	−.729
ChP5	3.69	1.092	−.364	−.477	FSP1	3.39	1.187	−.315	−.557
ChP6	2.45	1.078	.326	−.346	FSP2	2.97	1.076	.012	−.362
MoBS1	4.26	1.005	−.1.512	1.938	MoDM1	3.54	1.311	−.442	−.836
MoBS2	3.48	1.008	.125	−.756	MoDM2	3.54	1.034	−.169	−.391
MoBS3	2.95	1.136	.072	−.442	MoDM3	3.85	1.001	−.487	−.309
MoBS4	3.58	1.156	−.419	−.477					

MoP: Mother's perspective (Factor 1), ChP: Child perspective (Factor 2), MoBS: Mother's biological status (Factor 3), ChBS: Child biological status (Factor 4), MoBI: Mother's body image (Factor 5), BFSp: Breastfeeding space (Factor 6), MoR: Mother's role (Factor 7), SPPBf: Systems to protect and promote breastfeeding (Factor 8), FSP: Family and Social power (Factor 9), MoDM: Mother's decision making (Factor 10)

Table 3. **Reliability Analysis for Interactive Breastfeeding Scale (IBfS)**

Scales	Cronbach's α	McDonald's ω	Intraclass Coefficient ICC
Factor 1 (MoP)	.77	.71	.77
Factor 2 (ChP)	.74	.76	.74
Factor 3 (MoBS)	.71	.82	.74
Factor 4 (ChBS)	.75	.75	.75
Factor 5 (MoBI)	.83	.77	.83
Factor 6 (BFSp)	.76	.76	.76
Factor 7 (MoR)	.86	.77	.86
Factor 8 (SPPBf)	.76	.76	.76
Factor 9 (FSP)	.79	.78	.89
Factor 10 (MoDM)	.85	.76	.85

Table 4 **Confirmatory Factor Analysis of Interactive Breastfeeding Scale (IBfS)**

Factor	Indicator	Estimate	SE	Z	P
Factor 1	MoP1	.83	.05	17.95	< .001
	MoP2	.80	.04	18.85	< .001
	MoP3	.82	.04	20.13	< .001
	MoP4	.76	.05	14.08	< .001
	MoP5	.81	.04	19.58	< .001
	MoP6	.82	.05	17.36	< .001
	MoP7	.84	.05	18.46	< .001
	MoP8	.84	.05	18.46	< .001
	MoP9	.98	.05	21.68	< .001
	MoP10	.93	.05	20.45	< .001
	MoP11	.72	.04	17.22	< .001
	MoP12	.88	.05	19.84	< .001
	MoP13	.75	.05	15.24	< .001
	MoP14	.77	.04	14.66	< .001
	MoP15	.82	.04	20.13	< .001
	MoP16	.76	.05	14.08	< .001
	MoP17	.81	.04	19.58	< .001
	MoP18	.82	.05	17.36	< .001
	MoP19	.84	.05	18.46	< .001
	MoP20	.84	.05	18.46	< .001
Factor 2	ChP1	.84	.05	18.46	< .001
	ChP2	.84	.05	18.46	< .001
	ChP3	.98	.05	21.68	< .001
	ChP4	.93	.05	20.45	< .001
	ChP5	.72	.04	17.22	< .001
	ChP6	.88	.05	19.84	< .001
Factor 3	MoBS1	.75	.05	15.24	< .001
	MoBS2	.77	.04	14.66	< .001
	MoBS3	.76	.05	14.08	< .001
	MoBS4	.81	.04	19.58	< .001
Factor 4	ChBS1	.82	.05	17.36	< .001
	ChBS2	.84	.05	18.46	< .001
	ChBS3	.84	.05	18.46	< .001
	ChBS4	.98	.05	21.68	< .001
Factor 5	MoBI1	.93	.05	20.45	< .001
	MoBI2	.72	.04	17.22	< .001
	MoBI3	.88	.05	19.84	< .001
	MoBI4	.75	.05	15.24	< .001
Factor 6	BFSp1	.80	.05	20.68	< .001
	BFSp2	.85	.05	21.56	< .001
	BFSp3	.89	.05	22.12	< .001
	BFSp4	.76	.05	14.08	< .001
	BFSp5	.81	.04	19.58	< .001
Factor 7	MoR1	.82	.05	17.36	< .001
	MoR2	.84	.05	18.46	< .001
	MoR3	.84	.05	18.46	< .001
	MoR4	.98	.05	21.68	< .001
	MoR5	.93	.05	20.45	< .001
Factor 8	SPPBf1	.72	.04	17.22	< .001
	SPPBf2	.88	.05	19.84	< .001
	SPPBf3	.75	.05	15.24	< .001
	SPPBf4	.80	.05	20.68	< .001
	SPPBf5	.85	.05	21.56	< .001
	SPPBf6	.89	.05	22.12	< .001
Factor 9	FSP1	.98	.05	21.68	< .001
	FSP2	.93	.05	20.45	< .001
Factor 10	MoDM1	.72	.04	17.22	< .001
	MoDM2	.71	.04	16.57	< .001
	MoDM3	.80	.05	19.89	< .001

MoP: Mother's perspective (Factor 1), ChP: Child perspective (Factor 2), MoBS: Mother's biological status (Factor 3), ChBS: Child biological status (Factor 4), MoBI: Mother's body image (Factor 5), BFSp: Breastfeeding space (Factor 6), MoR: Mother's role (Factor 7), SPPBf: Systems to protect and promote breastfeeding (Factor 8), FSP: Family and Social power (Factor 9), MoDM: Mother's decision making (Factor 10)

Table 5. **Comparison of overall mean scores of oncologists for the total questionnaire (25 items) of NCCN guideline risk assessment, management and treatment of VTE before and after education program**

	MoP	ChP	MoBS	ChBS	MoBI	BFSp	MoR	SPPBf	FSP	MoDM	IBfS
MoP	1										
ChP	.539**	1									
MoBS	.342**	.456**	1								
ChBS	.541**	.433**	.416**	1							
MoBI	.153**	.210**	.227**	.235**	1						
BFSp	−.002	−.096	.139**	.064	.027	1					
MoR	.611**	.509**	.369**	.427**	.142**	.006	1				
SPPBf	.374**	.166**	.114*	.376**	.109*	.058	.423**	1			
FSP	.099	.216**	.195**	.295**	.184**	−.052	.118*	.105*	1		
MoDM	.390**	.213**	.179**	.341**	−.044	.003	.391**	.537**	.129*	1	
IBfS	.886**	.661**	.533**	.702**	.316**	.115*	.745**	.577**	.279**	.546**	1

**Correlation is significant at the 0.01 level (2-tailed)
*Correlation is significant at the 0.05 level (2-tailed)

The Confirmatory Factor Analysis in this table indicates that all factors are well-measured, with indicator loadings ranging from 0.71 to 0.98 and all being statistically significant ($P < .001$). This confirms the strong reliability and validity of each construct in the model.

This table reveals that the Interactive Breastfeeding Scale (IBfS) has strong positive relationships with several key factors. Notably, *Mother's Perspective (MoP)* ($r = .886$, $P < .001$), *Child Perspective (ChP)* ($r = .661$, $P < .001$), *Mother's Role (MoR)* ($r = .745$, $P < .001$), and *Child Biological Status (ChBS)* ($r = .702$, $P < .001$) are highly correlated with IBfS, indicating their significant impact on the overall breastfeeding experience. *Mother's Biological Status (MoBS)* also shows a substantial correlation ($r = .533$, $P < .001$). In contrast, *Breastfeeding Space (BFSp)* has a weaker correlation with IBfS ($r = .115$, $P < .05$), suggesting a minor influence, while *Family and Social Power (FSP)* shows a moderate correlation ($r = .279$, $P < .001$). *Mother's Decision Making (MoDM)* is significantly related to IBfS ($r = .546$, $P < .001$), highlighting its importance. Overall, the findings underscore the central role of mother and child-related factors in the breastfeeding experience, with some factors like breastfeeding space having less impact.

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