

ORIGINAL

Development of a Breastfeeding Support Scale for Couples

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Abstract : The aim of this study was to develop a Breastfeeding Support Scale for Couples (BSSC) and to examine its reliability and validity. The BSSC was designed to evaluate current state of mutual support necessary for breastfeeding from the perspective of wife as support recipient, and husband as support provider. Subjects were 324 wives who came for their 1-month postpartum checkup and their husbands. Valid responses obtained from 159 husbands (97.0%) and 303 wives (93.5%) were then subjected to analysis. The BSSC for husbands comprised of 10 questions and two factors, and a scale for wives comprised of 14 questions and three factors were ultimately created. Cronbach's alpha reliability coefficient ranged from 0.72 to 0.89 for all factors for both husbands and wives. The internal consistency and criterion-related validity of the scale were also confirmed. The model fitted the data satisfactory. Its reliability and validity were confirmed. The BSSC focused on mutual support among married couples, and may reveal new directions for breastfeeding support by shedding light on the differences in the perception of reciprocity support. The BSSC can evaluate couples and the appropriate support necessary for breastfeeding from the perspective of reciprocity support. *J. Med. Invest.* 63 : 96-103, February, 2016

Keywords : Breastfeeding, Perceptions of the support, Couples, Scale

INTRODUCTION

Breastfeeding has been declining in Japan since the 1950s as home births have transitioned to hospital deliveries. However, interest in breastfeeding has grown as a result of a breastfeeding promotion movement that began in 1974, and also as a result of birthing facilities incorporating the "Ten Steps to Successful Breastfeeding" developed jointly by the World Health Organization (WHO) and United Nations Children's Fund (UNICEF) in 1989. These efforts have resulted in 96% of pregnant women wanting to breastfeed their child and an increase in the proportion of breastfeeding at 1 and 3 months after birth compared with 10 years ago (1). The promotion of breastfeeding was also addressed in "Healthy Parents and Children 21" (from 2000 to 2014), and expanded and adopted as a behavioral indicator in "Healthy Parents and Children 21 (Second Phase)" from 2015.

Breastfeeding support encourages the formation of attachment between mother and child, and breastfeeding itself enhances positive and receptive feelings towards the child, making it a very effective means of reducing child-rearing anxiety (2). However, mothers' perception that their breast milk is insufficient (3, 4) and inappropriate advice from others has reduced women's willingness to breastfeed (5). Domestic and overseas studies from these various perspectives have suggested the importance of willingness to breastfeed, self-efficacy, and social support in continuing to breastfeed (6-11). The husband's attitude and support regarding breastfeeding also have an effect on breastfeeding (12-15). This particularly applies to the period after childbirth, which is a transitional period for the parents, where half of marital relationships are reported to worsen (16). To overcome this transitional period, support is needed to strengthen the couple's relationship, thereby placing significance on studies into breastfeeding support that focus

on married couples' relationships. Moreover, depending on the nature of the relationship and perceptions of the support recipient and provider, any positive intentions of the support provider could have a negative impact on the support recipient (17). Evaluating mutual support among married couples through breastfeeding should allow effective and continuous provision of support necessary for breastfeeding, strengthen couples' relationships, and lead to continuation of breastfeeding. The aim of this study was to develop a Breastfeeding Support Scale for Couples (BSSC) and to examine its reliability and validity. This scale was designed to evaluate current state of mutual support necessary for breastfeeding from the perspective of wife as support recipient, and husband as support provider.

STUDY METHODS

Target facilities and subjects

The target facilities were three hospitals promoting breastfeeding in Japan.

Subjects were wives who came for their 1-month postpartum checkup and their husbands. All subjects consented to participating in this study. Inclusion criteria were wives who breastfed exclusively or partially (mixed feeding), and couples who lived together or couples where the wife performed housework and child-rearing together with her husband at her parents' home. Exclusion criteria were noticeably bad health in either of the subjects, and poor health in the child.

Survey methods

Surveys were distributed to 324 wives who came for their 1-month postpartum checkup and who gave their informed consent to participate in this study. All 324 surveys were recovered. Surveys for husbands were distributed to the husbands of the 324 wives who consented to the study. If any husbands did not attend the 1-month postpartum checkup, their wives were given an envelope containing a study briefing paper and survey form to pass on to their husbands, and the survey forms were returned by mail. The

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survey period was from September 2013 to September 2014.

Ethical considerations

Subjects were explained verbally and in writing the purpose of the study, that participation in the study was voluntary, that they would suffer no disadvantage if they refused to participate, that confidentiality would be maintained, and that data obtained would not be used for any other purpose apart from the study. This study was approved by the Ethics Committee of Tokushima University Hospital (No. 1837). Also, it was approved by the Ethics Committee of each collaborating facility.

Survey procedure

1. Development of the Breastfeeding Support Scale for Couples (BSSC)

The BSSC was a scale designed to evaluate the status of reciprocity support among couples by measuring the support necessary for breastfeeding from the perspective of both wife and husband. The draft BSSC was created on the basis of the literature (18) and survey results obtained from interviews with seven breastfeeding wives and 11 husbands of breastfeeding wives. The draft BSSC was composed of the four concepts of "Intimacy toward the mother and child," "Cooperation with child-rearing and housework," "Appropriate environment for the wife" and "Desire to breastfeed," and contained the same 67 questions for both wives and husbands.

2. Examining the content validity and face validity

Three university instructors involved in breastfeeding support were asked to examine the content validity of the scale. The questions reflected the four above-mentioned concepts without bias, and because the survey was designed for both wives and husbands, the content validity of both the wives' and husbands' parts of the survey was evaluated.

To examine the face validity, a preliminary survey was conducted with 32 married couples, after which expressions were modified and three questions considered redundant were removed to give a total of 64 questions. In addition, a clinical midwife who was a qualified lactation consultant double-checked the face validity of these 64 questions.

3. Measurement scale to examine validity

1) The Quality of Marriage Index

The Quality of Marriage Index (QMI) is a scale developed by Norton in 1963 with confirmed reliability ($\alpha=0.927$) (19) and composed of six questions on the quality of marriage and rated on a four-point Likert scale.

2) The Childcare Social Support Questionnaire

The Childcare Social Support Questionnaire (CSSQ) is a scale developed by Haraguchi and Teshima (20) composed of three subscales and nine items and rated on a four-point Likert scale. A higher score indicates a better environment for child-rearing support. Cronbach's alpha for the reliability of the subscales is 0.75 to 0.81.

3) Confidence in breastfeeding

Breastfeeding wives were asked to rate their current confidence in continuing to breastfeed for more than 3 months on a scale of 0% to 100%. Only wives were asked about their confidence in continuing to breastfeed because a mother's breastfeeding confidence has an effect on continuing to breastfeed (7). A higher score for "Desire to breastfeed" was assumed to indicate stronger confidence in wives to continue breastfeeding.

Data analysis

The statistical software SPSS ver. 21.0J for Windows and AMOS ver. 22 were used for analysis, and the following analyses were conducted under the supervision of an expert in statistics.

To find the factor structure, the basic statistics of each variable were calculated and a factor analysis (Principal Factor Method and

promax rotation) was conducted. Cronbach's alpha was calculated to examine reliability. To examine validity, model goodness of fit was investigated by exploratory factor analysis and confirmatory factor analysis of construct validity. Criterion-related validity was examined using the QMI and the CSSQ.

RESULTS

Survey subjects

Survey forms were recovered from 164 husbands and 324 wives. Valid responses obtained from 159 husbands (97.0%) and 303 wives (93.5%) were then subjected to analysis. In addition, 150 married couples (n=300) from whom responses were obtained were used to determine validity.

The mean age of husbands was 34.0 ± 5.5 years, and apart from one who was unemployed, all had jobs and none had taken paternity leave.

The mean age of wives was 31.6 ± 4.5 years, and 146 (48.2%) were primipara, while 156 (51.5%) were multipara, and one (0.3%) was unspecified. The employment status of wives was 143 employed (47.2%), 156 as homemaker (51.5%), and four as unspecified (1.3%). Of those employed, wives on maternity leave accounted for 116 (81.1%) and the planned duration of maternity leave was a mean of 11.7 ± 5.5 months.

Factor structure of the Initial BSSC

1. Question analysis

Ceiling and floor effects of the 64 questions were verified and 29 questions for husbands and 12 questions for wives that were either with a mean of +1 standard deviation (SD) of ≥ 5.0 or a mean of -1 SD of ≥ 1.0 were removed. The correlation between questions was then examined with a correlation coefficient of ≥ 0.70 set as a reference. Questions were closely examined, and under supervision, questions that were easy to answer were left as is, while seven questions for husbands and 20 questions for wives were removed. Questions with an Item-Total (I-T) correlation of less than 0.3 were considered inappropriate questions in terms of consistency, and a further six questions for husbands and two questions for wives were removed. Consequently, 22 questions for husbands and 30 questions for wives were remained.

2. Extraction of factors by exploratory factor analysis

Factor analyses (Principal Factor Method, Promax Rotation, determining the number of factors in a scree plot) were performed. Starting from the secondary factor analysis, questions with weak commonality and questions with a low factor loading of ≤ 0.40 were removed, and exploratory factor analysis was repeated. The survey for husbands had a two-factor structure with 10 question items (Table 1-1), and for wives had a three-factor structure with 14 question items (Table 1-2). The first factor (7 items) and the second factor (3 items) of the BSSC for husbands and wives was a common question items.

1) Correlation analysis (I-T) between questions and analysis of all questions

The correlation coefficient between BSSC total score and score for each question fell within the range of $r=0.47$ to 0.81 ($p < 0.001$) for husbands, and $r=0.45$ to $r=0.73$ ($p < 0.001$) for wives, with all correlations of $r=0.30$ or higher.

2) Naming of factors

Factors were named, because contains the following concepts: The first factor (Considerations for the wife); understanding my wife's feelings when she is depressed, listening to my wife's worries and concerns, asking for the cooperation of others to ease the burden on my wife, immediately responding to my wife's needs, and making an effort to converse with my wife. The second factor (Cooperation with child-rearing and housework); child-rearing

Table 1-1 : Major factor analysis of the BSSC for husband (n=159)

Factor/Item	Factor loading		Communality
	1st factor	2nd factor	
1st factor : Considerations for the wife, Cronbach's α=.89			
20 Listening to my wife's worries and concerns	.79	.05	.67
58 Making an effort to converse with my wife	.78	-.07	.55
62 Respect one another	.76	-.19	.44
34 Understanding my wife's feelings when she is depressed	.73	-.02	.52
11 Consideration for stress to decrease	.73	.14	.67
21 Asking for the cooperation of others to ease the burden on my wife	.66	.03	.45
29 Immediately responding to my wife's needs	.54	.25	.52
2nd factor : Cooperation with child-rearing and housework, Cronbach's α=.72			
4 Child-rearing in shifts	-.08	.93	.79
5 Doing chores like housework or child-rearing by myself when capable	.12	.62	.48
6 Child-rearing is done by myself.	-.09	.57	.27
Sums of squares of loadings after rotation		4.26	3.02
Factor correlation matrix 1st factor		1.000	
2nd factor		0.590	1.000

principal factor method, promax rotation, Cronbach's alpha coefficient(α) for the total score was 0.87
 GFI=0.937, AGFI=0.898, CFI=0.974, RMSEA=0.057

Table 1-2 : Major factor analysis of the BSSC for wife (n=303)

Factor/Item	Factor loading			Communality
	1st factor	2nd factor	3rd factor	
1st factor : Considerations for the wife, Cronbach's α=.90				
34 Understanding my feelings when I am depressed	.91	-.08	-.08	.54
20 Listening to my worries and concerns	.88	-.02	-.05	.72
62 Respect one another	.77	-.09	.11	.63
58 Making an effort to converse with me	.74	-.08	.06	.54
11 My husband considerate for stress to decrease for me	.71	.13	-.08	.57
21 Asking for the cooperation of others to ease the burden on me	.61	-.01	.05	.40
29 Immediately responding to my needs	.56	.28	-.03	.55
2nd factor : Cooperation with child-rearing and housework, Cronbach's α=.78				
4 Child-rearing in shifts	-.08	.87	.05	.73
5 Doing chores like housework or child-rearing by himself when capable	.05	.71	.01	.56
6 Child-rearing is done by himself.	-.04	.69	-.10	.41
3rd factor : The husband's desire to breastfeeding, Cronbach's α=.78				
56 My husband's thought that breastfeeding is best for my child	-.09	-.08	.80	.54
57 My husband's thought that breastfeeding is good for me	-.08	-.04	.67	.39
48 My husband's respecting my thinking toward breastfeeding	.15	.10	.65	.62
27 My husband's thinking of how to encourage production of breastfeeding	.21	.06	.54	.49
Sums of squares of loadings after rotation		5.24	3.36	3.33
Factor correlation matrix 1st factor		1.000		
2nd factor		0.552	1.000	
3rd factor		0.550	0.344	1.000

principal factor method, promax rotation, Cronbach's alpha coefficient(α) for the total score was 0.89
 GFI=0.907, AGFI=0.868, CFI=0.931, RMSEA=0.079

in shifts, and doing chores like housework or child-rearing by myself when capable. The third factor (The husband's desire for the wife to breastfeed) ; breast milk is best for my child, breastfeeding is good for my wife, respecting the wife's thinking toward breastfeeding, and thinking of how to encourage production of breast milk.

Examining the reliability and validity of the BSSC

1. Internal consistency

Cronbach's alpha was calculated to verify the reliability of each question. The reliability of the factors in the survey for husbands ranged from α =0.72 to 0.89, and reliability of the scale overall was α =0.87. The reliability of the factors in the survey for wives ranged

from $\alpha=0.78$ to 0.90 , and reliability of the scale overall was $\alpha=0.89$.
 2. Examining the validity

1) Examining the construct validity

The three factors used in the exploratory factor analysis : (Considerations for the wife), (Cooperation with child-rearing and housework) and (The husband’s desire for the wife to breastfeed) were compared with the four concepts in the initial BSSC : ① “Intimacy toward the mother and child,” ② “Cooperation with child-rearing and housework,” ③ “Appropriate environment for the wife,” and ④ “Desire to breastfeed”. This revealed that the content of ① and ③ was included in the first factor, (Considerations for the wife), the content of ② was included in the second factor, (Cooperation with child-rearing and housework), and the content of ④ was included in the third factor, (The husband’s desire for the wife to breastfeed).

2) Examining the content validity

A correlation analysis of data from 150 couples that gave valid responses was performed to determine if questions in this scale coincided easily between husbands and wives or were prone to divergence in perceptions as a means of evaluating mutual support among couples (Table 2). A significant positive correlation was observed between the first factor in the wives’ survey and the first factor in the husbands’ survey ($r=0.28, p<0.001$), and the second

factor in the wives’ survey and second factor in the husbands’ survey ($r=0.39, p<0.001$).

3) Examining the criterion-related validity

Criterion-related validity was examined by calculating the correlation coefficients between BSSC total score and the QMI and the CSSQ scores.

Positive correlations were observed between the BSSC and the QMI for husbands ($r=0.43, p<0.001$) ; the BSSC factors and the QMI for husbands in the first factor ($r=0.49, p<0.001$). Positive correlations were also observed between the BSSC and CSSQ for husbands ($r=0.37, p<0.001$), and the BSSC factors and the CSSQ for husbands in the first factor ($r=0.40, p<0.001$; Table 3-1).

Significant positive correlations were observed between the BSSC and QMI for wives ($r=0.51, p<0.001$), and the BSSC factors and the QMI for wives ($r=0.26-0.60, p<0.001$). Significant positive correlations were observed between the BSSC and CSSQ for wives ($r=0.32, p<0.001$), and the BSSC factors and the CSSQ for wives in the first and second factors ($r=0.24-0.37, p<0.001$), but not in the third factor (Table 3-2).

4) Testing model goodness of fit

The goodness of fit of the hypothetical model obtained in the exploratory factor analysis was examined by confirmatory factor

Table 2 : The correlation coefficient between the husband and wife of the common factor (n=300 : 150 couples)

Factor/Item	The correlation	p*
1st factor : Considerations for the wife	.28	p<.001
34 Understanding my wife’s feelings when she is depressed	.24	.003
20 Listening to my wife’s worries and concerns	.24	.003
62 Respect one another	.25	.003
58 Making an effort to converse with my wife	.21	.011
11 Consideration for stress to decrease	.34	p<.001
21 Asking for the cooperation of others to ease the burden on	.21	.012
29 Immediately responding to my wife’s needs	.20	.016
2nd factor : Cooperation with child-rearing and housework	.39	p<.001
4 Child-rearing in shifts	.33	p<.001
5 Doing chores like housework or child-rearing by myself when capable	.36	p<.001
6 Child-rearing is done by myself	.26	.001

*Spearman’s correlation

Table 3-1 : The criterion-related of the BSSC for husband (n=122)

	total score	p*	Considerations for the wife	p*	Cooperation with child-rearing and housework	p*
The Quality of Marriage Index (QMI)	.43	p<0.001	.49	p<0.001	.11	.11
The Childcare Social Support Questionnaire (CSSQ)	.37	p<0.001	.40	p<0.001	.16	.08

*Spearman’s correlation

Table 3-2 : The criterion-related of the BSSC for wife (n=208)

	total score	p*	Considerations for the wife	p*	Cooperation with child-rearing and housework	p*	The husband’s desire for the wife to breastfeed	p*
The Quality of Marriage Index (QMI)	.51	p<.001	.60	p<.001	.26	p<.001	.28	p<.001
The Childcare Social Support Questionnaire (CSSQ)	.32	p<.001	.37	p<.001	.24	p<.001	.12	.97

*Spearman’s correlation

analysis and structural equation modeling.

(1) Confirmatory factor analysis

The fit indices with the three factors for wives as latent variables were a goodness of fit index (GFI)=0.907, adjusted GFI (AGFI)=0.868, comparative fit index (CFI)=0.931, and root mean square error of approximation (RMSEA)=0.079. The fit indices with the two factors for husbands as latent variables were a GFI=0.937, AGFI=0.898, CFI=0.974, and RMSEA=0.057.

(2) Structural equation modeling

Because the BSSC is a scale that measures the support necessary for breastfeeding, this study examined whether mutual support among couples has an effect on wives' confidence in continuing to breastfeed. Structural equation modeling was performed with wives' confidence in continuing to breastfeed and BSSC scores for the three factors for wives and two factors for husbands as observed variables, and a path diagram was created (Figure 1). Data from the 112 couples that gave responses regarding the wife's confidence in continuing to breastfeed were subject to analysis. All path coefficients of the model were significant ($p < 0.001-0.01$) and the fit indices of the model were a GFI=0.981, AGFI=0.943, CFI=1.000 and RMSEA= < 0.001 , $\chi^2=6.446$, $df=7$.

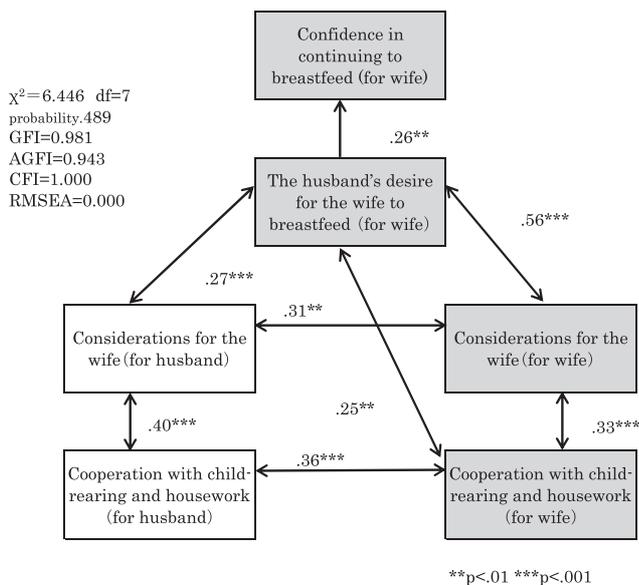


Figure 1 : Structural equation modeling of the BSSC (n=224 : 112 couples)

DISCUSSION

Reliability of the BSSC

Cronbach's alpha indicated that all factors exceeded the reference value (husbands ranged was $\alpha=0.72$ to 0.89 , wives ranged was $\alpha=0.78$ to 0.90), thereby ensuring the reliability of the scale overall (husbands was $\alpha=0.87$, and wives was $\alpha=0.89$).

Validity of the BSSC

Validity of the BSSC was examined through tests of construct validity, content validity, criterion-related validity and model goodness of fit.

1. Construct validity

Construct validity was examined from four concepts in the initial

BSSC. The three factors extracted were almost the same content structures as the four factors of the initial proposal. As such, it is apparent that construct validity of the initial BSSC is dependable.

As regards the third factor, (The husband's desire for the wife to breastfeed) which is "My husband's thought that breastfeeding is best for my child" "My husband's respecting my thinking toward breastfeeding" were not extracted in the husband's questionnaire. It was considered that "husband as support provider" perceived "breastfeeding is an act performed by the wife alone". On the other hand, "wife as support recipient" have thought that receiving these areas of support from husband was important.

However, this factor : (The husband's desire for the wife to breastfeed) was very important in order to continue the duration of the wives' breastfeeding. This factor has cultural and socio economic differences. The husband's desire affect the breastfeeding situation evaluated as "very strong desire of breastfeeding" (21), "maternal confidence" (22), "Insufficient milk" (23), "Satisfaction of husband's support" (24), and "postpartum depression" (25).

Many of research on breastfeeding have reported the importance of support. A husband's knowledge and attitude to breastfeeding which are those who pay attention to the mother and child as a support person in connection with continuation of breastfeeding are important (26). It was reported that if the husband express his hope on breast-feeding for his baby, the wife would like to breastfeeding (27, 28). The third factor, (The husband's desire for the wife to breastfeed) of this research provided the same consideration. It showed that a wife feels the husband's desire, and this was influential to breastfeeding. Since the factor structure of this scale included the concept required for continuation of breastfeeding, factor validity was confirmed.

2. Content validity

In the content validity, questions corresponding to the first and second factors for husbands and wives were evaluated for tendency for consistency or divergence in perceptions. This was done because this scale evaluates mutual support among couples. This revealed a weak positive correlation with (Considerations for the wife) in the first factor, which suggested that (Considerations for the wife) was an area of support prone to divergence in perceptions among married couples. When consideration towards the wife after childbirth is strong and unanimous among the married couple, the wife's mental health is better (29), suggesting that this support requires mutual adjustment of perceptions.

A wife's mental health influences breastfeeding. Especially, postpartum depressions were associated with exclusive breastfeeding abandonment (25). The postpartum depression and breastfeeding trouble are related mutually (30). When a wife highly recognized (Considerations for the wife) from a husband, the positive impact of the mental health on a wife is expected. Using this evaluation item, by applying the evaluation results to support couples, it was considered useful to continuation of breastfeeding.

A weak correlation was also observed with the second factor, (Cooperation with child-rearing and housework). The more satisfied mothers are with fathers' housework, the less child-rearing stress the mother has (31). This means that even if the husband thinks he is performing child-rearing and housework, if the wife does not acknowledge this and feel satisfied, a divergence in perceptions will arise, leading to stress and ineffective support.

Moreover, the wife who recognizes the support to breastfeed from a husband can continue to breastfeed for a long time (24). The support of a midwife and Lactation Consultants (32), and breast feeding peer support (33) etc have influence on breastfeeding duration. This BSSC can confirm that both wife and husband recognize the importance of breastfeeding. Also, using this scale to evaluate divergence in perceptions should allow adjustments to be made on the practice of breastfeeding. While a correlation was observed in both the first and second factors in the BSSC for husbands and

wives, a significant correlation was also observed in all common questions suggesting that the BSSC can evaluate mutual perception of mutual support between wife and husband, which was confirmed by the content validity of the scale.

Significant correlations were observed in both first and second factors in the BSSC for both husbands and wives. This provided evidence that all common questions can evaluate mutual perception and mutual support between wife and husband. This is supported by the content validity of this scale.

3. Criterion-related validity

For criterion-related validity, a significant positive correlation was observed between BSSC total score and the QMI and CSSQ, which confirmed the certainty criteria.

However, no significant correlation was observed between the score for the second factor in the BSSC for husbands and the CSSQ, or between the score for the third factor in the BSSC for wives and the CSSQ.

Question items (Cooperation with child-rearing and housework) of the second factor for husbands is which ask husband whether can do it by himself. In this research, researchers have thought that the concept of "collaboration" is not dependent on a wife.

Moreover, on the third factor for wives, this is likely due to differences between the support necessary for breastfeeding and child-rearing support. The CSS includes question items of child-rearing support, but the BSSC have not.

4. Model goodness of fit

To verify the effects of the BSSC on breastfeeding, the hypothesis that mutual support among married couples affects wives' confidence in breastfeeding was presented in a path diagram. The BSSC model was deemed to have good compatibility. This model confirmed that perception of mutual support in the first factor: (Considerations for the wife) and second factor: (Cooperation with child-rearing and housework) was linked to (The husband's desire for the wife to breastfeed), thereby leading to (Confidence in breastfeeding). This means that strengthening mutual support among couples has an effect on the wife's perceptions of (The husband's desire for the wife to breastfeed), which gives the wife confidence to continue breastfeeding allowing breastfeeding to continue. Moreover, the reason that the second factor for husbands has no direct effect on the third factor for wives is likely because, even if the husband (support provider) acknowledges support in the form of (Cooperation with child-rearing and housework), this will have no effect on the wife's (support recipient) perceptions of (The husband's desire for the wife to breastfeed) if her acknowledgement is weak.

There are many previous research on self-efficacy and breastfeeding duration domestically (7) and internationally (9-11). Breastfeeding self-efficacy interventions are important for improving breastfeeding outcomes (34). Breastfeeding self-efficacy is mother's belief about her ability and capacity to accomplish a task or to deal with the challenges of breastfeeding (7, 35, 36). Recognition of having received social support related to the self-efficacy of breastfeeding (37). According to Nakada's findings (7), the midwifery care for mothers who perceived milk insufficiency and were assured that their breast milk would flow adequately resulted in promotion of breastfeeding continuation. Breastfeeding duration was positively correlated with high self-efficacy on breastfeeding.

The husband is important as a key person of support (38). Those were confirmed by this scale. Living together with a husband will recognize the third factor for wives: (The husband's desire for the wife to breastfeed), and it leads to the confidence of breastfeeding. Living with a father gathers the rates of breastfeeding (39) were confirmed by this model.

The aforementioned findings suggested that this scale can evaluate couples and appropriate support necessary for breastfeeding from the perspective of reciprocity support.

The utility of the BSSC

In the utility of the BSSC, most existing child-rearing social support scales unilaterally measured the perceptions of the individual receiving support, while there were no scales that measured support perceptions from the standpoint of both the provider and the recipient. This scale focused on mutual support among married couples, and may reveal new directions for breastfeeding support by shedding light on the differences in the perception of reciprocity support. This scale is significant in that it evaluates couples and measures the current state of reciprocity support. If differences in the perception of current reciprocity support exist (40), mutual correction of these perceptions can lead to effective support that allows the support provider and recipient to empower each other (41). This can also have an effect on the couple's relationship, allowing them to help each other out and lead a happy life as a family, which is the foundation of breastfeeding as well as child-rearing as a whole. By focusing on breastfeeding, this scale may therefore also contribute to child-rearing support through examining breastfeeding. The aforementioned findings suggested that the BSSC scale can evaluate couples and the appropriate support necessary for breastfeeding from the perspective of reciprocity support.

CONCLUSIONS

In this study, we developed the BSSC to evaluate the support system needed for enhancing breastfeeding from the standpoint of both the family provider (husband) and the recipient (wife). A scale for husbands comprised of 10 questions and two factors, and a scale for wives comprised of 14 questions and three factors were ultimately created. Cronbach's alpha reliability coefficient ranged from 0.72 to 0.89 for all factors for both husbands and wives. The internal consistency and criterion-related validity of the scale were also confirmed. Model goodness of fit tests revealed a GFI, AGFI and CFI that surpassed the reference value, and a RMSEA that met the standard. The model fitted the data satisfactory.

STUDY LIMITATIONS

Problems remained in the wording of questions in the scale development process. Furthermore, the number of questions differed between factors in each factor, resulting in an unbalanced scale. It is also conceivable that the survey was only completed by couples that cooperated in breastfeeding. Therefore this study needs to collect further data based on this limitation.

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