

Development of a scale of mothers' childcare difficulty feeling toward their infants' crying

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Development of a scale of mothers' childcare difficulty feeling toward their infants' crying

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Abstract

Purpose

The purpose of this study was to develop a scale of mothers' childcare difficulty feeling toward crying of their 1-month-old infants and evaluate its reliability, validity, and usefulness as a screening scale.

Subjects and Methods

Subjects: The subjects consisted of mothers who delivered their healthy children in obstetric hospitals/maternity clinics in the Hokuriku district and brought their children to the health examination for 1-month-old infants.

Methods: In 26 maternity institutions that gave consent to our self-administered questionnaire survey, we distributed to mothers questionnaires with a written explanation of the purpose of this study with the understanding that their answers would not influence the health examination or the responses of medical staff members, and asked them to fill in the questionnaire and return it by mail. Scale development process: Based on the results of our previous surveys, difficult childcare situations in mothers and associated factors were organized, and a conceptual framework of childcare difficulty feeling toward crying was evaluated, and scale items for difficulty feeling with attention directed to child's crying were determined.

Analysis: Principle factor analysis was performed, and Cronbach's α coefficient and Pearson's correlation coefficient were obtained using statistical analysis software SPSS11.5J.

Results

Questionnaires were distributed to 700 mothers, of whom 441 responded. Effective responses were obtained from 425 mothers (215 primiparas and 210 multiparas).

As a result of item analysis and Item-Total (I-T) correlation analysis of 17 items of the scale of difficulty feeling toward crying, 14 items were adopted. After the principle factor analysis and promax rotation, 3 factors with an eigenvalue of ≥ 1 were extracted. When analysis was performed again after eliminating 3 items with a factor loading of ≤ 0.4 , 2 factors with an eigenvalue of ≥ 1 were extracted. Factor 1 consisted of 6 items and termed "childcare burden associated with crying". Factor 2 consisted of 5 items and termed "coping with crying and confidence in childcare". The cumulative contribution rate of the two factors was 41.2%, and Cronbach's α coefficient was 0.768 for Factor 1, 0.776 for Factor 2, and 0.840 for both factors as a whole. This scale was significantly correlated with "BDI-II" ($r = 0.421$, $p < 0.001$) and the "Feeling/Emotion scale" ($r = -0.642$, $p < 0.001$), which confirmed criterion-related validity.

Conclusion

The reliability and validity of the new scale were confirmed, and this scale may be useful for screening mothers' childcare difficulty feeling 1 month after delivery.

Key words

infant, crying, mother, childcare difficulty feeling, development of a scale

Introduction

In the stage before language acquisition, crying is an important mean for infants to communicate their own needs. However, until 2-3 months after birth, distinction among cries is difficult due to the development state of the pharynx/palate unless phonetic analysis is performed. In particular, baby's cries always sound similar to mothers who first experience childcare, and it is difficult for them to decide the needs of their infants based on cries^{1,2)}. Mothers with childcare experience often guess the meaning of crying based on the feeding time and infant's actions (such as bringing the fingers and hand to the mouth or mouth opening /shutting)³⁾. Unless coping appropriate for infants' need is not performed, they may continue crying. If mothers lack emotional stability that allows spontaneous recognition and acceptance of their infant's crying, they may feel helpless about the infant's crying, which increasing childcare difficulty feeling and anxiety.

Kawai et al.^{4,8)} performed clinical studies on mothers' anxiety and suggested that their infants' crying increases their anxiety about childcare and depressive feeling. Increases in mothers' anxiety about and difficulty feeling toward their infants' crying prevent appropriate childcare behavior in mothers, leading to childcare neurosis or abuse. Therefore, a scale that predicts such situations and allows screening for mothers/infants at risk is necessary.

The childcare-associated scales used at present include Hanasawa's⁹⁾ Scale for the Assessment of Feeling Toward Infants, Muller's¹⁰⁾ Maternal Attachment Inventory (MAI), and the Parenting Stress Index (PSI)¹¹⁾ for the measurement of childcare stress. The reliability of the Japanese version of MAI¹²⁾ has been demonstrated, but its validity has not been confirmed. The disadvantage of scales concerning stress was the high number of items. There are no scales for the measurement of difficult childcare situations and feelings associated with infants' crying. Therefore, the development of a scale with attention directed to infants' crying is necessary.

We developed a scale of mothers' difficulty

feeling toward their 1-month-old infants, and evaluated its reliability and validity and usefulness for screening 1 month after delivery.

Definition of terms

"Scale of childcare difficulty feeling toward crying" is a scale for the measurement of the degree of anxiety about and difficulty feeling toward childcare and stress such as the feeling of being burdened with childcare due to infants' crying.

Methods

1. Development of a scale of childcare difficulty feeling toward crying

1) Scale items

Difficult childcare situations in mothers and associated factors, which had been clarified by our previous interviews of mothers and longitudinal surveys 1 month, 4-5 months, and 1 year after delivery^{1,3,13-21)}, were organized. In these studies, we assumed difficult situations in mothers due to their infants' crying during each period and calculated a score for each situation as a mother's difficulty feeling score. In addition, the coefficients of correlations with factors possibly associated with difficulty feeling toward infants' crying were obtained, and factors associated with mothers' difficulty feeling toward infants' crying were extracted. As a result, difficulty feeling toward infants' crying was highly correlated with "characteristics of crying", "state of falling asleep", "burden of night feeding", "mother's health condition", "degree of mother's satisfaction with her sleep", and "childcare experience" 1 month after delivery, "mothers' nervousness as personality" and "degree of satisfaction with support" after 4-5 months, and "crying during night" and "interruption of sleep" after 1 year. Difficulty feeling toward infants' crying was also correlated with "sense of fulfillment in childcare", "confidence in childcare", "feeling of being burdened with childcare", and "prospect of childcare". Based on these factors and PSI, a conceptual framework of difficulty feeling toward infants' crying was developed (Fig. 1). In this study, the components

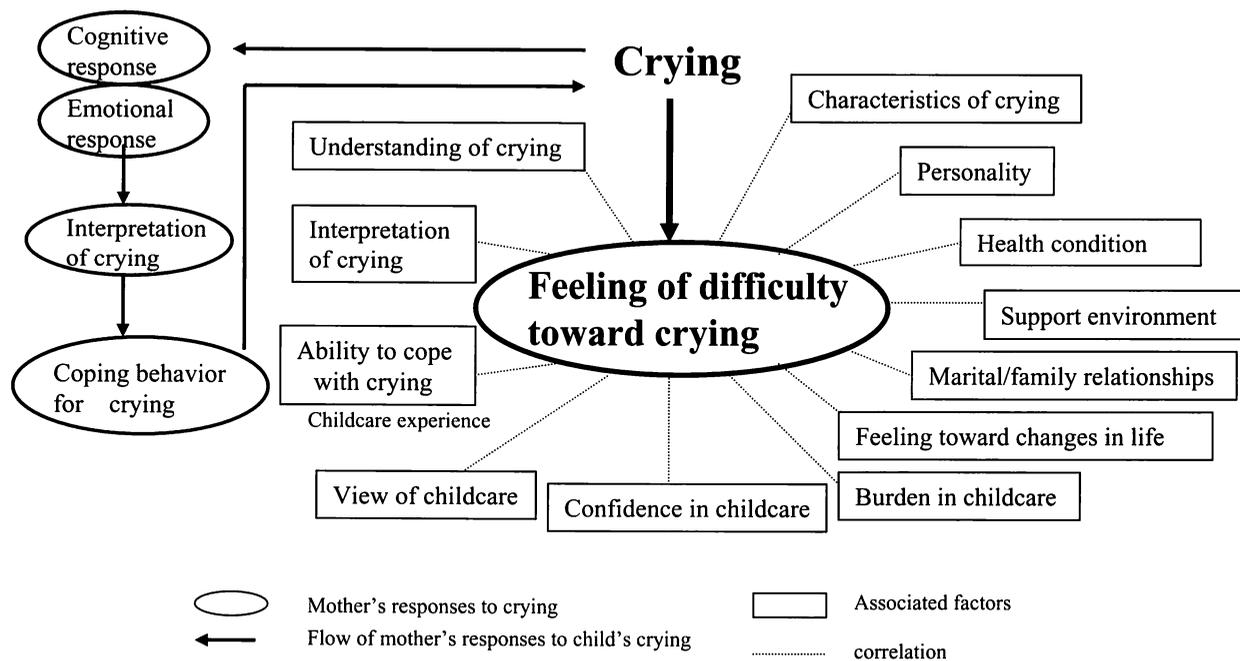


Fig. 1 Conceptual framework of difficulty feeling toward infants' crying

This shows the scheme of the feeling of difficulty toward crying

The mother who heard her child crying recognizes crying, interprets the meaning of crying, and copes with crying. When mothers have a feeling of difficulty toward crying, there are associated factors such as characteristic crying of the child, lack of childcare experience that does not facilitate sufficient coping, the absence of adequate support by others, and the absence of satisfaction with life after the birth of the child. Therefore, we organized these factors, evaluated existing childcare-associated scales, and produced scale items, paying attention to the child's crying using the Japanese version of the Parenting Stress Index as a reference.

of the scale were determined by the following methods. First, difficulty feelings were classified into "perception", which is mothers' perception of their infants' crying, "environment" such as support by others, "knowledge and behavior" such as mothers' interpretation of their infants' crying and coping ability, and "feelings" toward mothers' own life and childcare, and sentences for 67 items of 12 factors were produced. Attention was paid particularly to expressions associated with "crying". This scale is used for the measurement of the degree of mothers' difficulty feelings and stress due to their infants' crying that cause the feeling of being burdened with childcare. To use this scale in the future for screening for mothers who tend to feel childcare a burden 1 month after delivery, items were carefully selected and reduced to 17 items. For each item, the degree of mothers' feelings and stress was evaluated using a 4-grade Likert scale. The expressions in question sentences were so produced that a higher score indicates more marked negative emotion toward infants' crying and difficulty feeling (Table 1).

2) Validity of scale items

To determine whether the developed scale is consistent with the concept and structure that should be measured and exclude inappropriate items, 5 maternity nursing researchers/nurses with childcare experience evaluated the amount of the number of items, difficulty of questions, and time requiring for answering questions.

3) Preliminary survey of the developed scale and its reliability/validity

- (1) A preliminary survey of the scale was performed in 3 mothers 1-4 months after delivery.
- (2) Based on the results of the preliminary study, parts that were difficult to answer were revised.
- (3) As scales for the evaluation of criterion-related validity, a depression scale and the "Feeling/Emotion Scale" were selected.

[1] Depression scale

A depression scale was used to evaluate mothers' depression tendency, which is closely associated with childcare anxiety. Kawai et al.⁴⁾ described that childcare anxiety consists of lack of

Table 1. Composition and factors of the scale of difficulty feeling toward crying

Category	Factor	No	Item					
Perception	View of childcare	1	Your thought of childcare:	1. I should prevent my child from crying.	2. I want to minimize my child's crying.	3. I want to let my child cry to some extent.	4. I want to let my child cry without intervening.	
	Understanding of crying	2	When your child cries:	1. I am very anxious.	2. I am somewhat anxious.	3. I am slightly anxious.	4. I am not anxious at all.	
	Characteristics of crying	3	How your child cries:	1. Soft and gentle	2. Very common	3. Considerably persistent	4. Uncontrollable	
	Gap between perception and reality	4	The gap between child's crying you imagined and actual crying:	1. Considerable	2. Slight	3. Negligible	4. None	
	Change in life		15	The gap between your life before your child's birth and the present situation:	1. Marked and I feel it a burden.	2. Present, but it is natural.	3. Slight	4. None
17			When you heard your child crying:	1. I do not know what I would do beyond the limits of patience (immediately before outburst).	2. I want to be released from my child's crying as soon as possible.	3. I sometimes want to be released from my child's crying even for a short time of the day.	4. I never want to be released from my child's crying.	
Environment	Support	5	Persons who give support for or advice about your child's crying:	1. None	2. There are very few.	3. There are a few.	4. There are many.	
	Marital/family relationships	8	Changes in the marital/family relationship due to your child's crying:	1. Problems increased.	2. Problems arose.	3. There are no problems.	4. The bond was strengthened.	
	Mother's health problem	10	Your recent feelings and physical condition:	1. Very good.	2. Fairly good.	3. I am physically good but mentally weak.	4. I am physically and mentally very tired.	
Knowledge and behavior	Interpretation of crying	6	Reason for child's crying:	1. I don't know.	2. I sometimes know.	3. I frequently know.	4. I clearly know.	
	Coping behavior	7	Confidence in coping when your child cries:	1. I have no confidence in coping.	2. I have little confidence.	3. I have some confidence.	4. I have considerable confidence.	
	Coping ability	16	What to do when your child cries:	1. Never know what to do.	2. I sometimes do not know.	3. I usually know.	4. I always know.	
Confidence in childcare/burden	Sense of fulfillment in childcare	9	Your happiness with childcare when your child cries:	1. I am unhappy.	2. I am sometimes unhappy.	3. I am happy.	4. I am happy and filled with joy.	
	Confidence in childcare	12	Confidence in childcare:	1. I have much confidence.	2. I have some.	3. I have a little.	4. I have no confidence.	
	Future prospects of childcare	14	Future prospects of childcare:	1. I have no prospect and marked anxiety.	2. I have only slight prospect and have anxiety.	3. I have some prospect and little anxiety.	4. I have prospect and no anxiety.	
	Stress/feeling of being burdened		11	Childcare burden for me:	1. Considerable burden	2. Burden to some degree	3. Slight burden	4. No burden
			13	Your stress when your child cries:	1. Marked stress	2. Some stress	3. Little stress	4. No stress
Perception	Personality		Personality tendency (Nervous or optimistic: measurement by VAS)					

confidence, worries, perplexity, and the feeling of being inappropriate as a mother, which included the contents of "childcare difficulty feeling toward infants' crying" measured in this study. Therefore, we considered that the validity of the new scale can be evaluated using a depression scale. There are various depression scales such as the Japanese version of Zung's Self-Rating Depression Scale, Japanese version of the Edinburgh Postnatal Depression Scale, and the Beck Depression Inventory (BDI). BDI was developed by Beck et al.²²⁾ and is a widely accepted for the evaluation of severity in patients with depression and screening for depression in general groups. The first edition of BDI consists of 21 items of representative symptoms/attitudes selected by systematically combining clinical symptoms and patients' complaints that are often observed in patients with psychiatric disease accompanied by depressive symptoms but rarely observed in other patients. These items are evaluated according to the degree of the content of each choice using a 0-3 scoring system. Subsequently, slight revisions were made²³⁾, and a manual of BDI-IA was published in 1987²⁴⁾. BDI-IA asks about depressive states during the previous 1-week period while BDI-II asks about depressive states during the previous 2-week period including the day of the assessment. BDI-II was developed to determine the presence or absence of depressive symptoms and evaluate their degrees based on the diagnostic criteria of DSM-IV²⁵⁾. The Japanese version of BDI-II was produced by translation by Kojima and Furukawa, and its high reliability in Japanese has been confirmed²⁶⁾. Thus, BDI is a scale that has been evaluated for a long period and is most widely used at present in the fields of psychology and psychiatry²⁷⁾. The translation in the Japanese version of BDI-II is equivalent to the original version. We considered that BDI-II is appropriate for measuring depressive symptoms in Japanese and chose this scale for the evaluation of criterion-related validity.

[2] Feeling/Emotion Scale

The Feeling/Emotion Scale^{18,28)} consists of positive emotional items such as "cute", "want to

Table 2. Feeling/Emotion Scale (Tabuchi, 2004) items

Positive emotions	Negative emotions
1 Cute	6 Hatred
2 Want to hug	7 Want to cry
3 Happy	8 Irritating
4 Heart-bounding	9 Anxious (uneasy)
5 Pleasant	10 Troublesome

hug", and "happy" and negative items such as "hateful", "irritating", and "troublesome". For each item, scoring is performed using a 1-4 Likert scale ("strongly agree", "agree", "disagree", and "strongly disagree", and a higher score indicates more marked positive emotional tendency. Since mothers with difficulty feeling toward their infants' crying tend to have negative emotions^{17,19,21)}, the Feeling/Emotion Scale (Tabuchi et al., 2004) (Table 2) was used. Infants' crying tends to increase their mothers' difficulty feeling. We considered that evaluation of the difference between the crying and non-crying periods more clearly reveal their difficulty, and asked questions about feelings during the two periods.

2. A questionnaire survey using the childcare difficulty feeling scale

- 1) Subjects: The subjects were mothers who delivered their healthy infants and brought their children to the health examination for 1-month-old infants in 26 maternity institutions in the Hokuriku district that gave consent to this study.
- 2) Methods: We asked the mothers at the health examination for 1-month-old infants for cooperation in this study, explaining in writing the purpose and required time of this survey and the absence of the influences of the presence /absence of their cooperation on subsequent medical services. Questionnaires with return envelopes were distributed to mothers who gave consent, and the mothers were asked to return the questionnaire by mail.
- 3) Survey period: August-October, 2004

3. Analysis methods

Principle factor analysis was performed, and correlation coefficients were obtained using

statistical analysis software SPSS11.5J.

4. Ethical considerations

We obtained consent after explaining in writing that their response to the survey should be voluntary, the presence or absence of their cooperation in the survey has no influence on medical services in delivery institutions, they can withdraw at any time, the results of this survey are not used for purposes other than research, all data are kept anonymous and strictly managed, and attention is paid to privacy so that individuals can not be identified at the time of publication in academic journals.

This study was approved by the Ethical Committee of Kanazawa University Graduate School of Medical Science.

Results

1. Subjects' background

Questionnaires were distributed to 700 mothers, of whom 441 (63.0%) responded. Effective responses were obtained from 425 mothers (96.4%) consisting of 215 primiparas (50.6%) and 210 multiparas (49.4%) (Table 3).

The mean age of the mothers was 29.5 ± 4.4 years (17–42 years). During hospitalization in maternity institutions, 120 mothers (28.2%) and their infants remained in separate rooms, and more than 70% of the mothers experienced staying with their infants in the same room during certain periods. There were 294 mothers (about 70%) in a nuclear family.

Table 3. Profiles of subjects

		n = 425
Attribute	Category	Number (%)
Age group (years)	17–19	5 (1.2)
	20–29	203 (48.2)
	30–42	213 (50.6)
Number of deliveries	1	215 (50.6)
	2	155 (36.5)
	3	48 (11.3)
	≥4	7 (1.6)
Child's gender	Male	186 (43.8)
	Female	239 (56.2)
Feeding method	Breastfeeding alone	204 (48.0)
	Breastfeeding (main) and bottle feeding (little)	110 (25.9)
	Breastfeeding (50%) and bottle feeding (50%)	45 (10.6)
	Bottle feeding (main) and breastfeeding (little)	41 (9.7)
	Bottle feeding alone	24 (5.7)
Work	Working	5 (1.2)
	During postpartum leave (childcare leave)	125 (29.4)
	During postpartum leave (no childcare leave)	28 (6.6)
	Resignation after pregnancy/delivery	139 (32.7)
	Not working	127 (29.9)
Housing	House	228 (53.8)
	Condominium	48 (11.3)
	Apartment	148 (34.9)
Family constitution	Nuclear family	294 (69.2)
	Extended family	128 (30.2)
Condition in maternity institutions		
Mother/child in the same room	All day long	72 (16.9)
	Mainly during the day	25 (5.9)
	Mainly during the night	11 (2.6)
	When requested	194 (45.6)
Mother/child in separate rooms		120 (28.2)

Table 4. Component factors and loadings in the scale of difficulty feeling toward crying

Name of factor	Factor 1	Factor 2
Factor 1 "Childcare burden associated with crying"		
13 I feel stress when my child cries.	0.768	0.085
11 Childcare is a burden for me.	0.694	0.191
17 When I heard my child crying, I want to be released.	0.525	0.193
9 I am not happy with childcare.	0.477	0.328
10 I am mentally weak for the previous 1-2 weeks.	0.449	0.319
15 I feel a gap with between the present life and life before my child's birth	0.431	0.219
Factor 2 "Coping with crying and confidence in childcare"		
7 I do not have confidence in what to do when my child cries.	0.140	0.802
6 I do not know the reason for my child's cry.	0.135	0.640
16 I sometimes do not know what to do.	0.370	0.520
12 I have no confidence in childcare.	0.312	0.506
14 I am anxious about childcare.	0.435	0.439
Eigenvalue	4.283	1.304
Contribution rate (%)	22.030	19.183
Cumulative contribution rate (%)		41.213

Factor extraction method: principle factor analysis Rotation method: promax rotation

n=425

2. Analysis for the determination of scale items

1) Item analysis

There was no marked bias in answers for each item of the childcare difficulty feeling toward crying, and almost normal distribution was observed. No items showed negative correlations.

2) Item-Total (I-T) correlation analysis

Possible correlations between items of the difficulty feeling scale were evaluated, but no items showed content similarity ($r \geq 0.8$). The correlation coefficient between the score for each item and the total score for all items was calculated, and 3 items showing $r \leq 0.4$ were excluded.

3. Evaluation of the reliability/validity of the childcare difficulty feeling scale

1) Factor analysis (Table 4)

Of the 17 items of the scale of difficulty feeling toward crying, 3 items were excluded by item analysis and I-T correlation analysis, and the other 14 items were adopted. Principle factor analysis and promax rotation of the 14 items were performed. Three items showing factor loadings of ≤ 0.4 were eliminated, and 2 factors with an eigenvalue of ≥ 1 were extracted. Factor 1

consisted of 6 items and termed "childcare burden associated with crying", and Factor 2 consisted of 5 items and termed "coping with crying and confidence in childcare". The contribution rate of Factor 1 was 22.0%, and the cumulative contribution rate of Factors 1 and 2 was 41.2%.

2) Reliability in terms of Cronbach's α coefficient

The reliability coefficient α was 0.768 for Factor 1, 0.776 for Factor 2, and 0.840 as a whole.

3) Validity of the scale of childcare difficulty feeling toward crying (Table 5)

There was a significant positive correlation between this scale and BDI-II ($r = 0.421, p < 0.001$), showing more marked depression for a higher difficulty feeling score.

The α coefficient for "Feeling/Emotion Scale" (Tabuchi et al., 2004) was 0.852, showing high reliability. There were significant negative correlations between this scale and the Feeling /Emotion Scale both during the crying ($r = -0.642, p < 0.001$) and non-crying ($r = -0.445, p < 0.001$) periods. These results reflect more marked negative emotional tendency for infants for a higher difficulty feeling score. In addition, mothers with a more marked difference in the emotion

Table 5. Correlation between the scale of difficulty feeling toward crying and BDI-II or the Feeling/Emotion Scale

Scale	Correlation coefficient
Scale of difficulty feeling toward crying
BDI- II	0.421 ***
Feeling/Emotion Scale (Tabuchi, 2004)	
⟨Infant's crying period⟩	-0.642 ***
⟨Non-crying period⟩	-0.445 ***

Spearman's test ***p<0.001

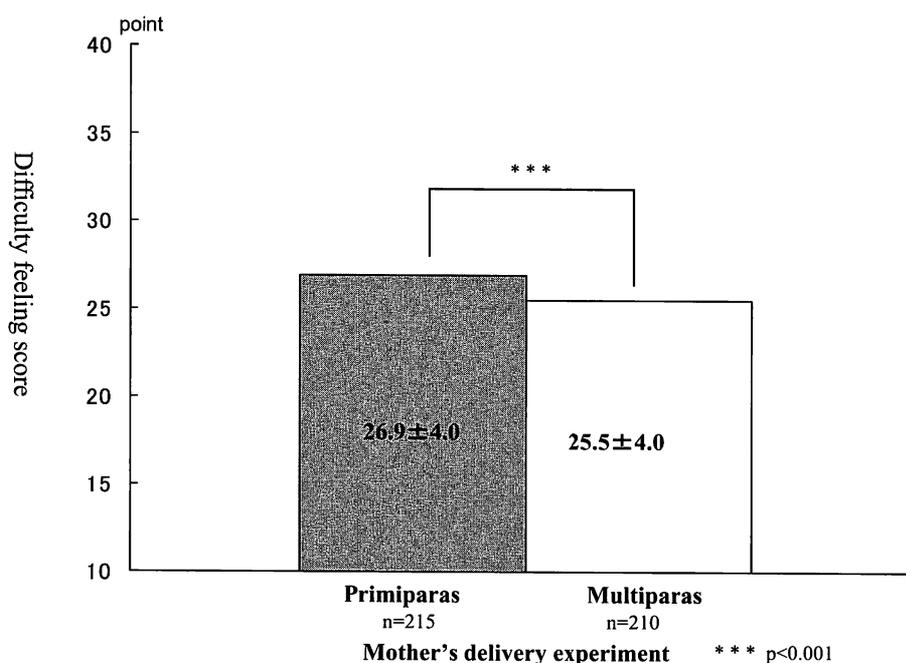


Fig. 2 Difficulty feeling scores according to mother's delivery experiment

score between the crying and non-crying periods showed a higher difficulty feeling score ($r = 0.451$, $p < 0.001$).

4. Confirmation of a hypothesis (Fig. 2)

We established a hypothesis that primiparas have more marked difficulty feeling than multiparas if this scale is valid as a scale of childcare difficulty feeling toward infants' crying. The mean difficulty feeling score was significantly higher ($p < 0.001$) in the primiparas (26.9 ± 4.0 SD) than in the multiparas (25.5 ± 4.0 SD). Therefore, this hypothesis was supported, and the validity of the scale was confirmed.

1) Difficulty feeling score in terms of subjects' background

Whether mothers are nervous or optimistic was assessed by mothers themselves using a Visual

Analog Scale (VAS) of 0-100, and the possible correlation between this VAS score and the difficulty feeling score was evaluated. There was a significant positive correlation between the two scores ($r = 0.273$, $p < 0.001$). Mothers who consider themselves nervous showed high difficulty feeling scores. Since the mean score using the VAS in all mothers was 50.6 ± 22.4 , the mothers were classified according to the mean score \pm standard deviation into the nervous group, average group, and optimistic group. The difficulty score was compared among the 3 groups (Fig. 3). The difficulty scores in the nervous group and average group (27.6 ± 4.3 and 26.3 ± 3.9 , respectively) were significantly higher ($p < 0.01 - 0.001$) than the score in the optimistic group (24.4 ± 3.6).

There was no association between the age of the

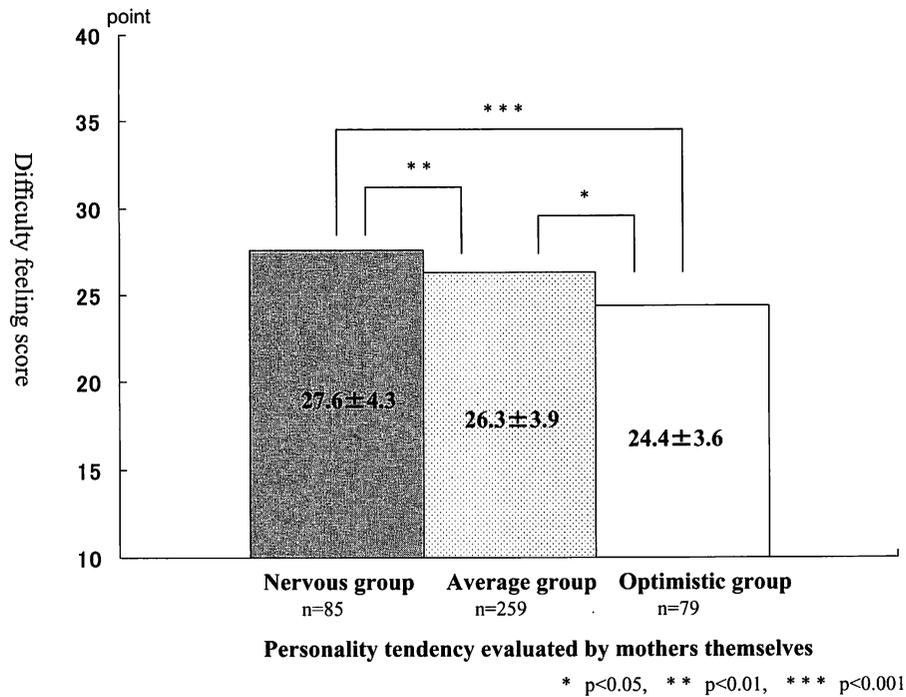
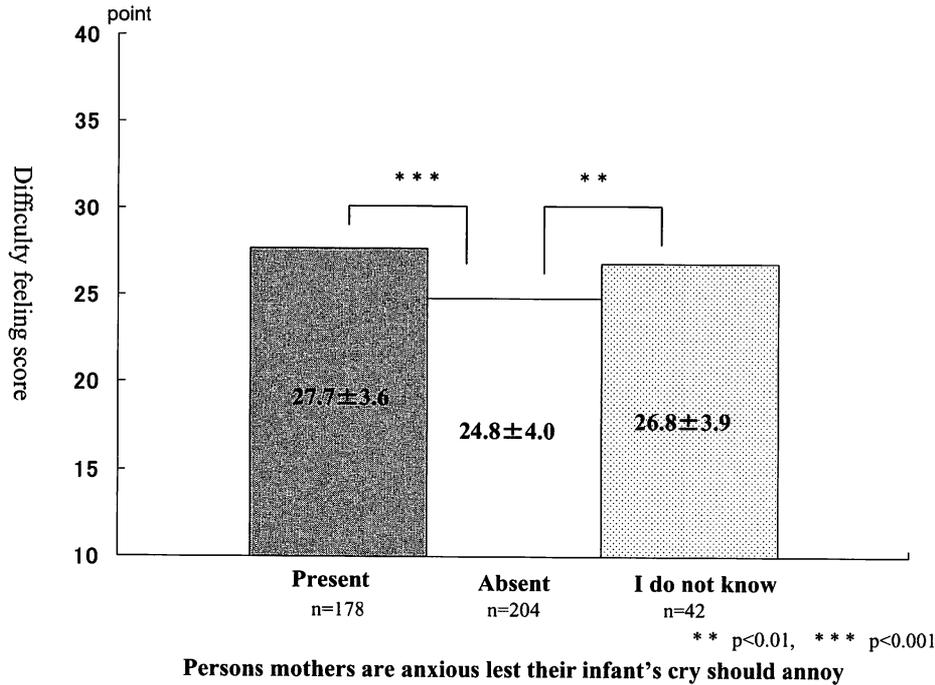


Fig. 3 Difficulty feeling scores according to mother's personality tendency

Table 6. Difficulty feeling scores according to attributes of the subjects

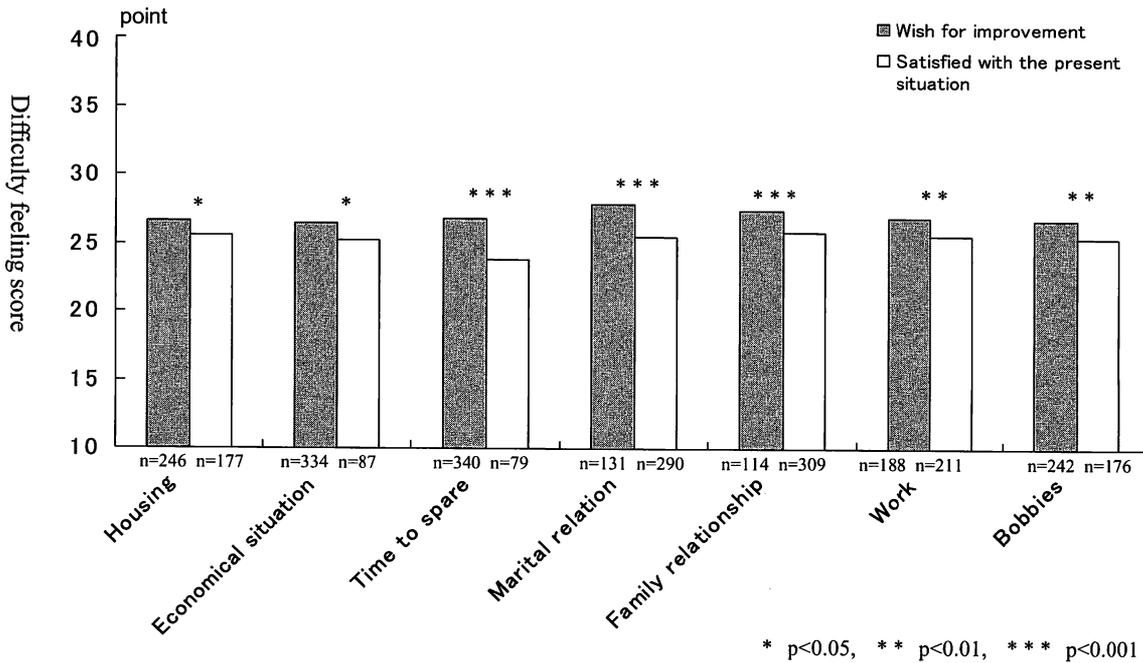
n = 425

Attribute	Category	Number (%)	Difficulty feeling score mean ± SD (min.-max.)
Age group (years)	17-19	5 (1.2)	23.6 ± 4.0 (18~28)
	20-29	203 (48.2)	26.6 ± 4.1 (14~38)
	30-42	213 (50.6)	25.8 ± 4.0 (13~37)
Child's gender	Male	186 (43.8)	26.2 ± 3.8 (14~34)
	Female	239 (56.2)	26.2 ± 4.3 (13~38)
Feeding method	Breastfeeding	204 (48.0)	25.8 ± 4.2 (13~38)
	Mixed feeding	196 (46.3)	26.5 ± 3.9 (14~37)
	Bottle-feeding	24 (5.7)	27.3 ± 4.5 (15~37)
Work	Working	5 (1.2)	27.0 ± 2.2 (24~30)
	During postpartum leave (childcare leave)	125 (29.4)	26.2 ± 4.7 (14~38)
	During postpartum leave (no childcare leave)	28 (6.6)	25.8 ± 3.6 (16~31)
	Resignation after pregnancy/delivery	139 (32.7)	26.5 ± 4.2 (13~37)
	Not working	127 (29.9)	25.9 ± 3.7 (18~35)
Housing	House	228 (53.8)	26.2 ± 4.1 (13~37)
	Condominium	48 (11.3)	25.7 ± 4.2 (14~36)
	Apartment	148 (34.9)	26.4 ± 4.0 (15~38)
Family constitution	Nuclear family	294 (69.2)	26.2 ± 3.9 (14~38)
	Extended family	128 (30.2)	26.1 ± 4.5 (13~37)
Condition in maternity institutions	Mother/child in the same room	302 (71.8)	26.2 ± 4.3 (13~38)
	Mother/child in separate rooms	120 (28.2)	26.3 ± 3.6 (19~35)



Persons mothers are anxious lest their infant's cry should annoy

Fig. 4 Difficulty feeling scores according to the presence/absence of persons mothers are anxious lest their infant's cry should annoy Difficulty feeling score



<Living environment items>

Fig. 5 Relationship between feelings toward living environments and difficulty feeling

mother and difficulty feeling score. The difficulty feeling score was not associated with the feeding method, whether the mother/child remained in the same room after delivery, family composition, or type of housing (Table 6).

However, concerning the presence/absence of persons mothers are anxious lest their infant's cry should annoy, the difficulty feeling score was significantly higher ($p < 0.001$) in 178 mothers who chose "present" (27.7 ± 3.6) than in 204 who chose

“absent” (24.8 ± 4.0) (Fig. 4).

For the housing environment, economic situation, time to spare, marital relationship, family relationship, work, and hobbies, the difficulty feeling score was significantly higher ($p < 0.05-0.001$) in mothers who are not satisfied with the present situation and wish to improve it or return to the one before the birth of their child than in mothers satisfied with the present situation (Fig. 5).

Discussion

1. Structure of the childcare difficulty feeling toward infants' crying scale

The “childcare difficulty feeling toward infants' crying scale” was developed to measure the degree of mothers' feeling of difficulty in childcare and stress such as the feeling of being burdened with childcare due to their infants' crying. Initially, the components of the scale were classified into “perception”, which is mothers' perception of their infants' crying, “environment” such as support by others, “knowledge and behavior” such as mothers' interpretation of their infants' crying and coping ability, and “feelings” toward mothers' own life and childcare. These components were extracted from factors associated with mothers' responses and difficulty when their infants cry based on the results of our previous longitudinal surveys^{1-3,15-21}.

The scale described in this study consisted of 2 factors, “childcare burden associated with crying” and “coping with crying and confidence in childcare”. This scale is characterized by the measurement of the degree of confidence/difficulty in childcare and difficulty feeling toward and stress of infants' crying. The PSI¹¹) is a scale for the measurement of mothers' childcare stress, and the reliability and validity of its original version have been confirmed in parents with children aged 1–12 years in the U.S.²⁹) However, the PSI consists of 101 items such as child's dispositional characteristics, parent's personality, and parent's social factors. The Japanese version of the PSI³⁰) also consists of 78 items, and the high number of items may burden mothers. Compared with these scales, our scale consists of only 11 items and

therefore, can be used as for screening and may be useful in health examination.

2. Reliability of the scale of childcare difficulty feeling toward infants' crying

The reliability of a scale is defined as the ability of the scale to consistently measure attributes that are measured³¹). For the evaluation of internal consistency, Cronbach's α coefficient was obtained. The Cronbach's α coefficient for the 11 items of this scale was 0.840, showing high internal consistency of the scale. In addition, the Cronbach's α coefficient for Factor 1 “childcare burden associated with crying” as a subordinate concept was 0.768 and that for Factor 2 “coping with crying and confidence in childcare” was 0.776. All the Cronbach's α coefficients were ≥ 0.7 , confirming the internal consistency of this scale.

3. Validity of the scale of childcare difficulty feeling toward infants' crying

The validity of a scale is defined as the degree of the appropriate measurement of concepts that are measured using the scale³²). The assessment methods include criterion-related validity, content validity, and construct validity.

Principle factor analysis performed for the evaluation of construct validity showed a contribution rate of 22.0% for Factor 1 and 19.2% for Factor 2. The cumulative contribution rate for Factors 1 and 2 was 41.2%. Since the number of factors was 2, and the cumulative contribution rate was comparable to that of other scales^{12,30}), the validity of this scale was regarded high.

Criterion-related validity was highly correlated with the Japanese version BDI-II and the Feeling/Emotion Scale (Tabuchi, 2004) used as external criteria.

The Japanese version BDI-II is a scale with high reliability and validity for the measurement of depression tendency. Kawai et al.⁴⁻⁸) performed serial clinical studies on anxiety and suggested that infants' crying increased anxiety about childcare and depressive feeling. Therefore, the significant correlation observed between our scale and this depression scale shows a high validity of this childcare difficulty feeling scale. The α coefficient for the Feeling/Emotion Scale (Tabuchi,

2004) was 0.852, showing high reliability. There was a significant negative correlation between our scale and the Feeling/Emotion Scale during the infant's crying period, mothers with more marked difficulty feeling toward crying showed more marked negative emotional tendency. These results were consistent with those in the study by Kawai et al.⁸⁾ that mothers with 0-year-old children showing marked childcare difficulty feeling had high scores for depressive tendency and negative feeling toward their child.

Thus, this new childcare difficulty feeling scale measures depressive tendency and negative feeling tendency toward infants' crying and is consistent with the view of Kawai et al. on the mentality of childcare anxiety.

4. Limitations of this study and future problems

We performed a survey in mothers who visited the health examination for 1-month-old infants. Therefore, this study suggested the clinical applicability of this scale 1 month after delivery. However, most maternity institutions where the survey was performed dealt with normal deliveries. Infants' crying can be a factor causing mothers' childcare anxiety. In particular, mothers with high-risk children, who remain separately from their infants for a long period, may have more marked childcare anxiety about and difficulty feeling toward infant's growth and development. Therefore, further studies are necessary to evaluate the generalization and universality of this scale and increase its accuracy.

Conclusions

1. Mothers' difficulty feeling toward their infants' crying was associated with their childcare experience, their personality tendency, the presence of persons mothers are anxious lest their infant's cry should annoy, and the degree of their satisfaction with living environments.
2. This scale consisted of 11 items, and Factor 1 was termed "childcare burden associated with crying" and Factor 2 was termed "coping with crying and confidence in childcare". The cumulative contribution rate of the two factors

was 41.2%.

3. The Cronbach's α coefficient of this scale was 0.84, showing high reliability.
4. Concerning the criterion-related validity of this scale, this scale was highly correlated with the BDI-II ($r = 0.421$) and the Feeling/Emotion Scale ($r = -0.642$: Tabuchi et al, 2004), showing high validity.

These results confirmed the reliability and validity of the new "scale of mothers' childcare difficulty feeling toward their infants' crying" and suggested its usefulness.

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児の泣きに対する母親の育児困難感尺度の開発

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要 旨

目的

1ヶ月時点での児の泣きに対する母親の困難感尺度を作成し、その信頼性と妥当性および1ヶ月時の母親の育児困難感に対するスクリーニング尺度としての有用性を検討する。

対象と方法

調査対象：北陸地方における病産院にて正常児を出産後、1ヶ月健診に訪れた母親

調査方法：自己記入式質問紙調査を承諾の得られた26出産施設において、研究目的および調査回答が健診および医療者の対応等に影響しない旨の説明を書いた文書を添えた質問紙調査を配布し、記入および郵送による返信を依頼した。

尺度の作成プロセス：これまでの調査結果より、母親の育児困難な状況やその関連要因を整理し、泣きに対する育児困難感の概念枠組みを検討、児の泣きに着目した困難感の尺度項目を作成した。

分析：統計解析ソフトSPSS11.5Jを用い、主因子分析法、Cronbach's α 係数、Pearson's 相関係数等を求めた。

結果

調査用紙は700部配布し、441名から回収、有効回答は425名（初産婦215名、経産婦210名）であった。

泣きに対する困難感尺度17項目のうち、項目分析とI-T相関分析の結果、14項目を採択し、主因子法、プロマックス回転し、固有値1以上の3因子が抽出されたが、0.4以下の因子負荷量の3項目を削除し分析しなおしたところ、固有値1以上の2因子が抽出された。第1因子は6項目から構成され「泣きに伴う育児負担」、第2因子は5項目から構成され「泣きの対応と育児の自信」と命名した。2因子の累積寄与率は41.2%、Cronbach's α 係数には第1因子 $\alpha = 0.768$ 、第2因子 $\alpha = 0.776$ 、全体 $\alpha = 0.840$ であった。本尺度と「BDI- II」とは、 $r = 0.421$, $p < 0.001$ 、「感情・情動尺度」とは $r = -0.642$, $p < 0.001$ と有意な相関を示し、基準関連妥当性が確認できた。

結論

今回開発した尺度の信頼性と妥当性が検証され、1ヶ月時の母親の育児困難感に対するスクリーニング尺度として有用性があることを確認した。