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Effects of Social Support on New Mothers' Mental Stress Related to Infant Care Stressors

Atsuko Kita', Hitomi Nishiumi', Yukano Teramura', and Yukari Okumura

The purpose of this study was to further clarify the quality and function of social support and whether it acts as a buffer against stress or leads to conflicts as observed in the emotional reaction of new mothers during the early period of first infant caring. Seventy women in the early puerperal stage after normal childbirth through normal pregnancy progression at two general hospitals in H. prefecture took part in this study from July through November, 2002 after giving their informed consent. The subjects were interviewed by the authors at least three times during the early period of infant caring. The quality and function of the social support as perceived by the mothers was assessed according to House's four sub-concepts: emotional, material, informational, and appraisal support. The mental stress of the mothers was evaluated according to the Japanese State Trait Anxiety Inventory (JSTAI). Two-way layout ANOVA was used for a comparative analysis of these scores related to the mental stresses caused by infant caring. It was found that the perceived material support from the subjects’ mothers showed positively direct and buffer effects related to their recognition of stressors on both state and trait anxiety. In terms of appraisal support, however, its direct effect related to their recognition of a stressor was inversely related to the subject’s state anxiety.

Nurses should recognize the importance of social support for the new mothers because of the effects, both positive and negative, on their mental condition, as well as its potential to lead to conflict.

Key Words
new mother,
early infant care period,
state–trait anxiety,
social support.

INTRODUCTION

In view of the increase in nuclear families and the decrease in the birthrate in Japan, the importance of social support for infant caring mothers has been pointed out as a way to improve maternal stress related to infant care. The husbands and the mothers of new mothers suffering from severe infant care stress have been regarded as their most important social support members, especially during the period from 1 to 2 weeks after leaving hospital until the medical checkup for mothers and infants a month after childbirth. However, the effects of social support on infant caring mothers have not been sufficiently clarified. While some studies have shown its buffering effect against the mother’s depression after childbirth, other studies have indicated that it isn’t necessarily helpful or effective, especially when per-
The purpose of this study was to further clarify the quality and function of social support and whether it acts as a buffer against stress or can lead to conflicts as observed in the emotional reaction of new mothers during the early period of first infant caring.

**METHODS**

Conceptual framework and operational definition

The conceptual framework and the operational definition of the terms used in this study are shown in Fig. 1. House developed the paradigm of “the mental stress reactions to psychological and social stressors are influenced by the perception of social support”. For this study, we developed the conceptual framework of “the social support paradigm” based on House’s concept. That is, the recognition of infant care stressors and social support changes over time and is related to the mental stress reaction of the mother in the early period of her infant caring. We have partly examined this relationship indicated by the solid line in Fig. 1.

The operational definitions of four terms used in this paper were, 1) “The early period of infant caring” was defined as lasting from 6 to 8 weeks after childbirth, in which period not only recovery from changes in the sexual organs and internal secretion caused by pregnancy and childbirth takes place, but mental adaptation the onset of infant caring is needed. 2) Mental stress reaction of mothers was defined as the mental confusion occurring in a certain situation related to the first pregnancy, childbirth and infant caring, which the mothers cannot cope with emotionally. We also adopted the definition of “state anxiety” by Spielberger as the definition of mental stress reaction of new mothers. That is, the essential qualities are emo-

![Figure 1. Conceptual framework](image-url)
nutional responses: feelings of apprehension, tension, nervousness, and worry caused by an excitement of an autonomic nerve to physical or psychological stress. In this study a “trait anxiety” was defined the tendency to recognize stressful situation as dangerous or threatening and to respond to such situations with elevations in the intensity of their state anxiety reactions. Furthermore, “stress” was defined as such a whole process. 3) Perceived social support was classified into four types: emotional, material, informational and appraisal, based on House’s\(^3\) definition as modified by Cronenwett\(^4\) to make it suitable for maternal nursing. 4) “Infant care stressors” were defined as the phenomena peculiar to a mother during the early stages of caring for her newborn infant. These stressors consist of “Infant related factors” which are related to infant caring stressors and “Life related factors” which are related to life changes. “Infant related factors” comprises, among others, crying and skin irritations of the infant. As for “Life related factors”, these include lack of sleep, an irregular life rhythm and a lack of time to share with the husband.

Subjects

Of 98 women in the early puerperal stage after a normal childbirth through normal pregnancy progression at two general hospitals in H. prefecture, 70 took part in this study from July 1 through November 30, 2002 after giving their informed consent. The rate of the valid responses for this study was 71.4%.

Procedures

Each subject was interviewed by the authors at least three times in the early period of infant caring: within a week, from 2 to 3 weeks, and from 5 to 7 weeks after childbirth. The first interview was conducted by face-to-face during their stay in hospital, and the second and third were conducted by telephone for 15 to 20 minutes each after the subjects had been discharged from hospital.

Ethical considerations

The head nurse confirmed subject’s intention whether the authors could make a direct request to attend to the investigation to them or not. After that, the authors obtained both oral and written consent from the subjects.

The contents of the explanation to the subjects were:

1. To be confirmed that participation in the study was voluntary, and that the subjects were free to refuse to participate or discontinue participation.
2. To be assured the subjects that nonparticipation in the study would have no effect on medical services provided to the subjects.
3. To be asserted that the authors would take all possible precautions to protect the subjects’ privacy.

Measurements

Items investigated and measurement tools used

1) The Japanese State Trait Anxiety Inventory (JSTAI)\(^5\): To measure the mental stress reaction of the mothers. The JSTAI\(^5\) was adopted for this study. The JSTAI\(^5\) has been used extensively in research and clinical practice. It comprises separate self-report scale for measuring state and trait anxiety. The state
The state anxiety scale consists of twenty statements that evaluate how respondents feel “right now, at this moment”: (1) not at all; (2) somewhat; (3) moderately so; (4) very much so. The trait anxiety scale consists of twenty statements that assess how people “generally” feel: (1) almost never; (2) sometimes; (3) often; (4) almost always. The range of the score is 20–80 points, and it has been demonstrated that the higher score is, the higher tendency is to feel uneasy. The reliability and validity of the state trait anxiety inventory developed by Spielberger, on which the JSTAI state–trait is based, have been proven to be high. The $\alpha$-coefficients of the JSTAI estimated at all the three points in time of the investigation were also high: 0.88~0.91 for state anxiety and 0.88 for trait anxiety.

2) Questionnaire on Infant care stressors\(^{17}\): For the questionnaire designed by us to identify the stress factors related to infant care consisted of Infant/Life related factors described above, the subjects were asked for to answer the questions with “yes” or “no” (Figure 2).

**Infant related factors**

1. My baby’s navel protrudes hemorrhage and exudes pus.
2. I don’t understand whether my baby’s feces are normal or abnormal.
3. I don’t understand whether my baby’s urine is normal or abnormal.
4. My baby still has jaundice.
5. My baby very often cries and is in a bad mood.
6. My baby often cries at night.
7. My baby doesn’t sleep well and wakes up frequently.
8. I don’t understand why my baby is crying.
9. My baby sleeps a lot and is not so active.
10. My baby is always looking in the same direction: My baby’s hip joint is stiff.
11. My baby has skin irritation: seborheic alopecia, dermatitis of buttocks.
12. My baby often vomits milk.
13. My baby hasn’t gained much weight: My baby has gained too much weight.
14. I don’t understand whether breastfeed enough.
15. I can’t breastfeed directly: My baby suckles my nipple very weakly, my baby suckles at irregular intervals.
16. I don’t know correct amount of artificial milk: I should add.

**Life related factors**

1. My life rhythm has become irregular: Meal times, sleeping time, etc. have become irregular.
2. I don’t get enough sleep: I can’t sleep for a long time.
3. I can’t take care of my baby and do housework as well.
4. I can’t go out shopping, to the bank, etc.
5. I don’t have any free time: I can’t watch TV, or have time for hobbie like reading.
6. I can’t have enough time to share with my husband.
7. I can’t freely meet any friends.

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**Figure 2. Questionnaire on infant care stressors**
3) The explanatory note and questionnaire on the perception of social support: The subjects were asked whether they perceived some kinds of social support provided by their mothers and husbands, which were classified according to the explanatory note produced by Kita and based on the definitions of four subcategories of social support or lack thereof (Figure 3). The subjects were asked to answer the questions with "yes" or "no".

As for the content validity of the two questionnaires, two experienced teachers and a doctoral student specializing in maternal nursing examined the data obtained through a pilot study of 12 subjects. The obstetricians and the head nurses at the hospitals concerned were also involved in the validation process. On the basis of their findings, we concluded that the content validity of the two questionnaires was assured, since the subjects did not express any confusion about the questions or were unable to answer any of the questions of either of the two questionnaires developed by us.

Data analyses

The Mann–Whitney U–test was used for a comparative analysis of the JSTAI scores classified by social support resource and according to the time elapsed after a childbirth. Two–way layout ANOVA was used for a comparative analysis of these scores related to perceived social supports by new mothers and the mental stresses caused by infant caring. Differences with p-values smaller than 0.05 were considered to be statistically significant. Statistical software SPSS 10.0 was used for the data analysis in this study.

RESULTS

The subjects mean age was 27.8 years (SD = 3.8), which was consistent with the national standard for a woman delivering her first infant. As for the subjects’ background, those with education beyond junior college accounted for 71.4% of

(1) Emotional support

This person shows love and sympathy for me (and my baby), trusts me, and shows concern for me (and my baby).

(2) Material support

This person helps me in some concrete way, for example, she/he helps with chores and infant care, gives (lends) me some money and so on.

(3) Informational support

This person helps me to solve problems by teaching me something or giving me some information about infant care that I need to know.

(4) Appraisal support

This person helps me to know myself as I am now through her/his experience and situation which are similar to mine in terms of infant caring. That is, I feel that I am helped by this person, because we have something important and meaningful in common.

Figure 3. Explanation of social support
the group, and 31.4% were engaged in paid work. Some 81.4% of the subjects were living in their parental home for 2 to 3 weeks, and 42.9% for 5 to 7 weeks after childbirth.

1. Seventy percent or more of the subjects perceived all four kinds of social support from their mothers at all the three points in time of the investigation. Moreover, perceived appraisal support from their mothers was increasing gradually 5 to 7 weeks after childbirth, while that of the other three kinds, emotional, material and informational support, were decreasing a little 5 to 7 weeks after childbirth (Figure 4-1).

2. On the other hand, about 70 percent or more of the subjects perceived all four kinds of social support from their husbands within a week after childbirth. However, their perception of material, informational and appraisal support started to decrease after that. Especially in terms of perceived appraisal support from their husbands, only 10% of the subjects perceived this 2 to 3 weeks after childbirth, while that of the husbands, material support started to increase 5 to 7 weeks postpartum (Figure 4-2).

3. Subjects who perceived material support from their mothers showed lower trait anxiety scores than those who did not 5 to 7 weeks after childbirth through the Mann–Whitney U-test (37.0±1.3 vs.41.9±1.5; p<0.05). As for the appraisal support, subjects who perceived such support from their mothers scored higher for state anxiety (37.8±1.0 vs. 32.9±2.1; p<0.05), and lower for trait anxiety than those who did not 5 to 7 weeks after childbirth (36.5±1.2 vs. 40.2±1.2; p<0.05).

Additionally, any kind of support by the husbands was not accompanied by any significant differences either the state or trait anxiety scores at any of the three points in time of the investigation.

4. Effects of correlation between perceived social support from the mothers and husbands of an infant caring subjects and infant care stressors on their mental stress reaction were identified by two-way layout ANOVA (Table 1).

When subjects perceived material support from their mothers, their state anxiety scores were significantly lower than those without such perception, regardless of whether or not they mentioned no time to share with their husbands. However, when subjects did not perceive material support from their mothers and mentioned they had no time to share with their husbands, they showed a significantly higher state anxiety score than those without such stressor. Statistical differences were respectively shown in these two factors (F=5.70, p<0.05; F=4.61, p<0.05). The effect of interaction between these two factors on the state anxiety score was also noted (F=4.62, p<0.05). As for another life related factors of irregular life rhythm, subjects who mentioned such stressor showed a significantly higher state anxiety score than for those who didn’t, which was related to perceived material support from their mothers. Statistical differences were respectively shown in these two factors (F=5.00, p<0.05; F=6.22, p<0.05). However, the interaction was not given. For skin irritations of subjects’ babies, almost similar result to irregular life rhythm was shown related to perceived material support from their mothers toward their trait anxiety scores. Statistical differences were respectively shown in these two factors (F=6.57, p<0.05; F=4.23, p<0.05). No effect of interaction between these two factors on the state anxiety score was noted.
Figure 4-1) Social support from mother

*The number of subjects shows those who gave an answer for each type of support for two or more points in time.

Figure 4-2) Social support from husband

*The number of subjects shows those who gave an answer for each type of support for two or more points in time.

Figure 4. Perception by new mothers of social support from their mothers and husbands
### Table 1. New mother’s mental stress related to perception of social support and recognition of infant care stressors

1-1) Effects of perception of material support related to recognition of infant care stressors on state anxiety scores 2-3 weeks after childbirth

<table>
<thead>
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<th>Non-perception of material support from mother</th>
<th>F</th>
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<tbody>
<tr>
<td>Recognition of lack of time shared with husband</td>
<td>Recognition of lack of time shared with husband</td>
<td>Infant care stressor</td>
</tr>
<tr>
<td>“No”</td>
<td>“Yes”</td>
<td>“No”</td>
</tr>
<tr>
<td>37.8 (1.3)</td>
<td>37.8 (1.8)</td>
<td>39.0 (4.3)</td>
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1-2) Effects of perception of material support related to recognition of infant care stressors on trait anxiety scores 5-7 weeks after childbirth

<table>
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<th>Non-perception of material support from mother</th>
<th>F</th>
</tr>
</thead>
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<td>Recognition of irregular life rhythm</td>
<td>Recognition of irregular life rhythm</td>
<td>Infant care stressor</td>
</tr>
<tr>
<td>“No”</td>
<td>“Yes”</td>
<td>“No”</td>
</tr>
<tr>
<td>37.0 (1.2)</td>
<td>40.3 (2.1)</td>
<td>39.0 (4.2)</td>
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1-3) Effects of perception of appraisal support related to recognition of infant care stressors on state anxiety scores 5-7 weeks after childbirth

<table>
<thead>
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<th>Perception of appraisal support from mother</th>
<th>Non-perception of appraisal support from mother</th>
<th>F</th>
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<tr>
<td>Recognition of lack of sleep</td>
<td>Recognition of lack of sleep</td>
<td>Infant care stressor</td>
</tr>
<tr>
<td>“No”</td>
<td>“Yes”</td>
<td>“No”</td>
</tr>
<tr>
<td>34.9 (1.3)</td>
<td>41.9 (1.5)</td>
<td>32.1 (2.0)</td>
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</tbody>
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Note: 1. Two-way layout ANOVA was used for the comparative analysis of the STAI scores. For the results, the main effects on both of perception of social support and recognition of infant care stressors are shown.
2. The STAI scores are shown as Mean(SE); *: p<0.05
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In contrast, subjects not perceiving appraisal support from their mothers without mentioning the life related factors of lack of sleep showed the lowest state anxiety score among all four categories classified by these two factors: perception of appraisal support and recognition of lack of sleep. However, mothers who perceived appraisal support as well as mentioned the life related factors of lack of sleep showed the highest state anxiety score among such four categories. Statistical differences were respectively shown in these two factors (F=5.53, p<0.05; F=5.23, p<0.05), however, no effect of interaction between these two factors on the state anxiety score was noted.

DISCUSSION

This study clarified which of the four types of social support from the subjects’ mothers and husbands perceived by them during the early infant caring period had an influence on their mental reaction related to infant care stressors.

Our results suggest that material and appraisal support from the mothers of subjects had the greatest effect on the mental stress reaction of a subject related to infant care stressors.

As for material support, the main positive effect of the support and some life related factors on both state and trait anxiety scores was a direct effect. This means the effect of social support adds to the effect of mental stress reaction of the subjects related to infant care stressors. We also identified the interaction between material support and one of the life related factors, which means “positive buffer effect of social support”, that is, its mutually potentiating effect against the mental stress reaction of the subjects.

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Spielberger

have also clarified the direct effect of a social support on social integration by measuring an individual’s social relationships and roles, and their buffer effect was identified in terms of perceived support or self-respect–support. From this point of view, we could identify both the direct and buffer effects of perceived material support to be given by the subjects’ mothers on the mental stress reaction of subjects related to infant care stressors. We believe there are two reasons underlying such a clear effect. One is that the material support is typically easy to perceive, and the other is that nearly half of the subjects were living in their parents’ home for more than a month after childbirth, so that they could fully avail themselves of material support from their mothers.

By a comparative analysis, the trait anxiety score of the subjects who perceived appraisal support from their mothers was significantly lower than the score of those who did not, but the state anxiety score of the former was significantly higher than that of the latter. However, as for the mothers who perceived appraisal support, the direct negative effect on their state anxiety which was related to the recognition of infant care stressors by two-way layout ANOVA was noted.

Spielberger explains that state anxiety, which was adopted as the index of mothers’ mental stress condition in this study, is an emotional reaction to an external stimulus. Trait anxiety indicates how much the personality is sensitive to being evaluated due to lack of pride and self-confidence, which may be caused by a negative evaluation resulting from a painful experience in a childhood relationship with a parent, a teacher or a friend. On the other hand, House developed a functional definition of appraisal support, in which the information in-
cluded in the appraisal is related to self-evaluation. He named this concept “social comparison”. Other persons important to a person become informational sources during self-evaluation. On the basis of these concepts, we can interpret the findings in our study as indicating that appraisal from the subjects’ mothers of perceived as negative without any affirmation produces a high state anxiety score, while positive appraisal supported by affirmation results in a low trait anxiety score. Some previous studies\textsuperscript{5, 18, 24} have demonstrated that appraisal support can lead to conflicts, so that is not really social support. Our findings also suggested that.

Many studies\textsuperscript{4-7} regard the husband as an important source of social support for a new mother during the early infant caring period. However, it was found in this study that the husbands were not such important sources of support for new mothers. As mentioned above, one of the background factors affecting the result was that most of the subjects in our study were living in their parents’ home for more than a month after childbirth. This suggests that the importance of social support for new mothers by their husbands begins to become apparent after they have returned to their own home and started a new life style of infant caring.

**CONCLUSION**

To summarize, the perceived material support from the subjects’ mothers showed direct and buffer effects on their mental condition, that is, on both their state and trait anxiety. Her condition is also related to their recognition of additional infant related factors during the early postpartum period. In terms of appraisal support, however, direct effect on the subjects’ state anxiety showed an inverse relationship to the recognition of additional infant related factors by them. Moreover, the social support from their husbands appeared not have any effect on the mental condition of the mothers during the early period of first infant caring.

We therefore conclude that our findings can clarify the quality and function of social support which either protects against or leads to greater mental stress or conflict for the infant caring mothers during the early period of infant care.

Nurses and midwives should provide care for new mothers by promoting the utilization of social support resources based on understanding the qualitative and functional characteristics of social support for them.

**Acknowledgement**

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