Quality of social network for pregnant women in Japan with focus on parity and family structure

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QUALITY OF SOCIAL NETWORK FOR PREGNANT WOMEN IN JAPAN WITH FOCUS ON PARITY AND FAMILY STRUCTURE

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ABSTRACT

The purpose of this study was to identify 1) the quality of human network of a pregnant woman, and 2) characteristics of a high-risk pregnant woman for motherhood due to the shortage of social support.

We reviewed social network system using a questionnaire: size; nature of relationship with a pregnant woman; duration of relationship with her; frequency of contact with her; and distance from her residence. We also categorized the subjects according to two typical conditions: parity (primigravida or multigravida) and family structure (nuclear or extended). The author interviewed 125 subjects in their final trimester, living in Narashino City near Tokyo to answer the questionnaires. 117 pregnant women agreed and participated in the study.

It was found that our subjects had the social network consisted of the mean size of 9.0 supportive members (SD=1.9), which was similar to that (8.5) reported in the USA by Cronenwett. Our subject perceived her husband and mother most important as supportive members. 10 to 20 % of our subjects perceived husbands' mothers, brothers, and even their friends as non-supportive members. Roughly 40 to 60 % of our subjects did not list husbands' fathers, brothers and fathers as network members.

We found that pregnant women in Japan, especially primigravidas and pregnant women belonging to nuclear family, had poor quality of social support network. Pregnant women with poor quality of social network were considered as high risk for emotional and behavioral problems both to mother and child. Therefore, midwives should be able to predict the risk or mental stress in childcare due to shortage of

social support. This will avoid child abuse through the establishment of necessary human network for isolated mothers.

INTRODUCTION

Individuals can receive social support from people of their social network and maintain their social identity through them. The quality of the social network and social support for a pregnant woman may influence her adaptability to parenting as well as her mental and physical condition during pregnancy. Recently, a social support studies on African Americans by Norbeck et al.[17] statistically clarified that social support interventions could reduce low birth weight. Social condition of a pregnant woman may also affect her needs for social support.

Japan has experienced dramatic changes related to progress in recent years, such as urbanization that had led to an increase in nuclear families, women with high educational backgrounds, and so on. Families and individuals might be becoming more isolated from neighbors and the community. All of them also might have been altering the quality of social networks and social support for pregnant women and mothers in Japan.

It's possible that such situation had led to growing difficulties or inability of parents for child rearing, or even a tendency of abusing their babies. In 1998, 131 deaths of babies and children were actually attributed to being abused by their parents in this country. The number of child abuse not resulting in death has also been reported to be getting larger, with over 5,000 incidents reported during the last several years.

We[12] studied the quality of social support for pregnant women in Japan by focusing on available sources to provide social support to them. It was found in the study that pregnant women mainly perceived their families and their husbands as the sources of emotional and instrumental support, and their friends as the sources of appraisal and information support.

The purpose of this study was to identify: 1) the quality of human network structure of a pregnant woman, and 2) characteristics of a pregnant woman who had a high-risk for motherhood due to shortage of social support.

METHODS

Subjects
The author interviewed 125 subjects in their final trimester of pregnancy at Narashino National Hospital near Tokyo, and asked them to answer the questionnaires. 117 pregnant women agreed and participated in the study.

Narashino National Hospital had about 500 to 600 annually live births, and was in the center of Narashino City. Narashino City, which had an area of 20 sq. km and was about 60 km from Tokyo, had a population of approximately 150,000 and roughly 1,500 annually live births. With 70% of its working population engaged in service industries, Narashino City had been progressively urbanized, and was a typical satellite city of the capital.

Background of the subjects

The mean age of the subjects was 29.3 years (SD=3.8), and the mean duration of marriage was 4.1 years (SD=1.9). 53% of the subjects were primigravidas, 83% of them were belonging to nuclear families, and the mean number of family living together was three persons. The subjects with education beyond junior college accounted for 40% of the group, and 36% were without paid work outside their home. The number of pregnant women who had been working outside their home was considerably smaller in Japanese subjects than that in those studied by Cronenwett[7] in the USA (23% in Japan vs. 87% in the USA). The low employment rate despite a high level of education of our subjects might reflect a tradition in Japan, which holds that men should work outside the home and women remain at home.

Procedures

Informed consent was obtained from all participants before they joined the study. We provided further explanation for the questionnaire to the subjects at the outpatient clinic of Narashino National Hospital after obtaining informed consent from the participants.

The subject filled out the questionnaire at home according to our explanation for it. A subject first listed not more than 20 persons who had a significant relationship with her, regardless of whether she considered the relationship positive or negative. She then evaluated network members listed by her on a 7-point scale. Network members who had been evaluated by her as (1) very supportive, (2) moderately supportive, or (3) slightly supportive were categorized as supportive member. Those who had been evaluated by a subject as (4) neutral, (5) slightly non-supportive, (6) moderately non-supportive, or (7) very non-supportive were categorized as non-supportive members.

The subject then answered the questions about each person listed. The questionnaire used in the study was a modified version of that by Cronenwett[7] based on House[11] and Gottlieb[8], and included some features adopted by previous investigators[1, 3, 4, 5, 14, 15, 16, 18]. We reviewed social network system using a questionnaire: size; nature of relationship with a pregnant woman; duration of relationship with her; frequency of contact with her; and distance from her residence.

We determined each component of social network as operational definition as

follows. The social network was defined as the structure and the source of social support, which included important persons whom a pregnant woman felt a strong relationship, regardless of whether they were actually supportive or not. Size was defined as the number of persons whom a pregnant woman felt subjective strong relationship, and listed as network members. Nature of relationship was defined according to their social status: husband, mother, husband's mother, friend and so on.

Other three components were classified in their actual standards of the daily life of pregnant women. Duration of the relationship was classified as either long (at least 5 years) or short (less than 5 years). Frequency of contact (by mail, phone, fax, e-mail, or in person) was classified as either frequent (at least once a week) or infrequent (less than once a week). Distance from the residence of a pregnant woman was classified as either near (in the same residence or within walking distance) or far (living at a distance that necessitated some means of transport).

We also categorized the subjects according to two typical conditions: parity (primigravida or multigravida) and family structure (nuclear or extended).

Data Analyses

The Pearson correlation coefficient (Pearson's r) between categories of social network components was calculated in order to decide whether the classification standards were appropriate.

Multiple regression analysis was used to identify the category of network components as most effective explanatory variable of the number of supportive members: the background of network members of the subjects could be simply explained by this effectiveness. We also performed multiple regression analysis in order to clarify the explanatory variables for each number of supportive members classified in parity and family structure.

RESULTS

1.Network members for a pregnant woman

It was shown that family, friends and family of her husband were mainly included as supportive members (Fig.1). Over 90% of our subjects perceived their husbands and mothers as supportive members, followed by sisters and husbands' mothers. On the contrary, 10 to 20 % of our subjects also perceived husbands' mothers, brothers, and even friends as non-supportive members. Furthermore, roughly 40 to 60 % of our subjects did not list husbands' fathers, brothers and fathers as network members (Fig. 2).

2. Network structure of pregnant women

The basic structure of the social network of a pregnant woman according to
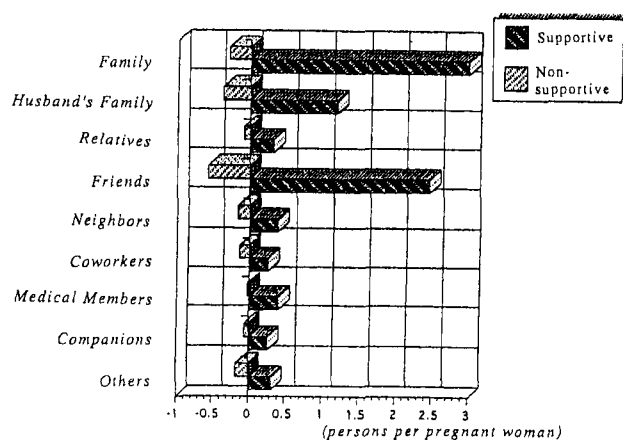
Fig. 1. Perceived Members as Supportive and Non-supportive
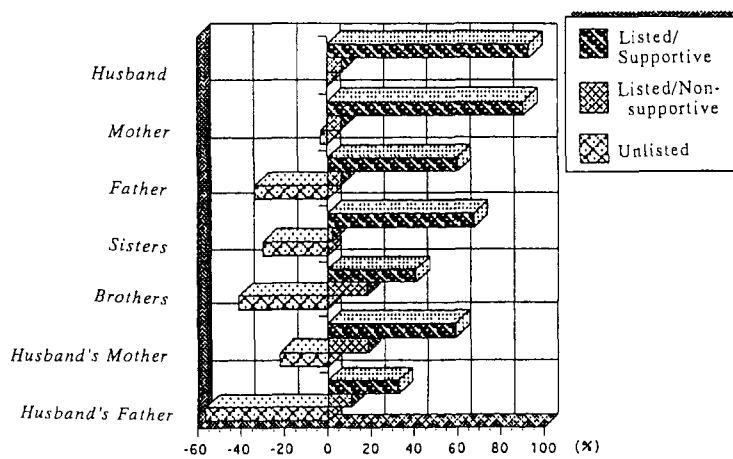by Pregnant Women.

Fig. 2. Perception by Pregnant Women on Important Family Members
as Network Members: Listed/Supportive; Listed/Non-supportive;
or Unlisted.

each category of the social network components was shown in Table I. The mean number of the social networks was 10.9 persons per pregnant woman. The mean number of supportive members per subject (M=9.0, SD=1.9, range 1 to 20) was larger than that of non-supportive members (M=1.9, SD=0.6, range 0 to 11).

The mean number of supportive members who had a long duration of relationship with a pregnant woman was larger than that of those who did a short duration of relationship. The mean number of supportive members living far from a residence of a subject was also much larger than that of members living at a short distance. There was no difference between the numbers of supportive members who had frequently or infrequently had contact with a subject.

In order to examine a correlation between the categories of the social network components, the Pearson r was calculated (Table II). The following strong correlations were shown: between the category of members who had a infrequent contact with a pregnant woman and that of these who lived a long distance from her residence (r =0.78. p < 0.001); between the category of members who had a frequent contact with her and that of these who lived a short distance from her residence (r =0.70. p < 0.001); between the category of members who had a long duration of relationship with her and that of these who lived a long distance from her residence (r = 0.63. p < 0.001).

However, no correlation was found between any two categories of each component of social network: for example, between the category of members who lived a short distance from her residence and that of those who lived a long distance.

3. Explanatory variables for the total supportive members

The number of supportive members classified in parity and family structure and each category of social network components were shown in Table III.

Multiple regression analysis was performed in order to identify the explanatory variables for the total supportive members classified in parity and family structure (Table IV). When subjects were classified in the parity, the number of supportive members who had a relationship of long and short duration with her, and that of those who frequently had contact with her, were selected to account for the number of supportive members of multigravidas [adjusted R= 0.99, adjusted R^2=0.99, F =1,249.3 > F(3.51) (0.01)=4.20: p < 0.01]. Only the number of supportive members who infrequently had contact with a subject was selected to account for the number of supportive members of primigravidas [adjusted R=0.89, adjusted R^2=0.79, F=293.8 > F(1, 60) (0.01)=7.10: p < 0.01].

When subjects were classified in family structure, the number of supportive members who had a relationship of long duration with the pregnant woman and that of short duration was selected to account for the total number of supportive members for pregnant women belonging to extended families [adjusted R=0.99, adjusted

Table I. Mean Numbers of Supportive and Non-supportive Members Classified
by Social Network Components and Categories per Pregnant Woman.

	(Persons per pregnant woman)					
	Supportive members			Non-supportive members		
Components & Categories	Range	Mean	SD	Range	Mean	SD
Size (number of members)	1-20	9.0	1.9	0-11	1.9	0.6
Duration of relationship (with the pregnant woman)						
Long (≧ 5 years)	0-17	5.4	1.3	0-10	1.1	0.4
Short (< 5 years)	0-17	3.6	0.3	0-5	0.8	0.2
Frequency of contact (with the pregnant woman)						
Frequent (≧ 1/week)	1-18	4.5	1.8	0-5	0.5	0.1
Infrequent (< 1/week)	0-17	4.5	1.7	0-10	1.4	0.4
Distance from residence (of the pregnant woman)						
Short (walking distance)	0-15	3.2	0.9	0-4	0.4	0.1
Long (requires transport)	0-18	5.5	1.6	0-11	1.5	0.2

Table II. Correlation Matrix of Numbers of Supportive Members Classified by Each Category of Social Network
Components.

Components	Size	Duration of relationship		Frequency of contact		Distance from the house	
Categories		Long	Short	Frequen. Infrequent		Short	Long
Size							
Duration of relationship (with the pregnant woman)							
Long (≧ 5 years)	0.71						
	10.69***						
Short (< 5 years)	0.65	-0.08					
Frequency of contact (with the pregnant woman)	9.08***	0.83					
Frequent (≧ 1/ week)	0.53	0.44	0.23				
	6.67***	5.31***	2.59***				
Infrequent (< 1/ week)	0.78	0.49	0.58	-0.13			
Distance from residence (of the pregnant woman)	13.16***	6.10***	7.65***	1.37			
Short (walking distance)	0.49	0.38	0.25	0.70	0.05		
	5.95***	4.36***	2.75**	10.40***	0.53		
Long (requires transport)	0.73	0.63	0.36	0.09	0.78	-0.07	
	11.38***	8.58***	4.18***	0.99	13.45***	0.75	

Note: The matrix shows the Pearson correlation coefficients between each category of social network components of supportive members.

Table III. Number of Supportive Members Classified by Parity and Family Structure of Pregnant Women and Each Category of Social Network Components.

(persons per pregnant woman)

Components Categories	Size Mean ± SD	Duration of relationship Long Mean ± SD	Duration of relationship Short Mean ± SD	Frequency of contact Frequent Mean ± SD	Frequency of contact Infrequent Mean ± SD	Distance from her house Short Mean ± SD	Distance from her house Long Mean ± SD
1) Parity							
multigravida (n = 57)	8.4 ± 3.9	5.4 ± 2.5	2.9 ± 1.3	5.3 ± 2.2	3.1 ± 1.2	4.2 ± 2.0	4.1 ± 2.0
primigravida (n = 60)	9.6 ± 4.6	5.4 ± 2.2	4.2 ± 2.0	3.8 ± 1.5	5.8 ± 2.1	2.4 ± 1.1	6.7 ± 3.2
2) Family structure							
extended (n = 20)	9.8 ± 3.7	6.6 ± 3.1	3.2 ± 1.4	4.6 ± 1.9	5.2 ± 2.4	4.3 ± 1.6	5.5 ± 2.1
nuclear (n = 97)	8.9 ± 4.0	5.2 ± 2.4	3.7 ± 1.2	4.5 ± 2.0	4.4 ± 1.8	3.0 ± 0.6	5.5 ± 1.7

Table IV. Multiple Regression Analysis of Total Numbers of Supportive Members Classified by Parity and Family Structure of Pregnant Women for Selected Components of the Social Network.

	R	R^2	F	Duration of relationship Long β	F	r	Short β	F	r	Frequency of contact Frequent β	F	r	Infrequent β	F	r	Distance from residence Short β	F	r	Long β	F	r
Total subjects	0.77	0.59	173.1**										0.78	173.1**	0.78						
Parity																					
multigravida (n = 57)	0.99	0.99	1,249.3**	0.84	1,489.1**	0.98	0.61	875.9**	0.97	0.06	6.7*	0.34									
primigravida (n = 60)	0.89	0.79	239.8**										0.89	239.8**	0.89						
Family structure																					
extended (n = 20)	0.99	0.99	2,455.9**	0.93	4,134.2 **	0.99	0.93	4,134.2**	0.99												
nuclear (n = 97)	0.81	0.65	184.7**										0.81	184.7**	0.81						

Note: R = adjusted multiple correlation coefficient, R^2 = coefficient of determination, β = standardized partial regression coefficient, r = partial correlation coefficient. F - test values are represented as * $p < 0.05$, ** $p < 0.01$.

$R^2=0.99$, $F=2,455.9 > F (2, 17) (0.01)=6.2 : p < 0.01$]. The number of supportive members who infrequently had contact with a pregnant woman was selected to account for the total number of a pregnant woman belonging to nuclear families [adjusted $R=0.81$, adjusted $R^2=0.65$, $F= 184.7 > F (1, 95) (0.01)=4.8: p < 0.01$].

DISCUSSION

The mean size of the social network identified in this study was 9.0 persons per pregnant woman, and similar to that reported in the USA by Cronenwett[7] (8.5 persons per pregnant woman). However, we could not compare further details of quality of social network between them.

In this study, we found that a pregnant woman perceived her husband and mother as the most supportive and important members. On the contrary, a part of our subjects did not perceive husbands' mothers, their brothers and friends so much supportive or important as husbands and mothers. In addition, roughly 40 to 60 % of our subjects ignored husbands' fathers, brothers and fathers of them as network members. Pregnant women might not perceive these ignored members as persons with desirable quality of social network, but have ambivalent and conflictive feeling with them.

In the previous study[12], we had clarified that family and friends were main sources of social support: emotional and instrumental supports were mainly perceived from her husband and mother, and appraisal and informational supports from friends. In this study, we could clarify the degree of perception on them as social network members.

Our fundamental point of view for this study was that a network member who had a relationship of long duration with a pregnant woman was the most important sources of social support for her. The reason was that they could provide her intimacy, assistance, stability, social integration, reliability, or enhanced self-worth (Brandt et al.[6]). We also considered that network members who lived a short distance from her residence and frequently had a contact with her could provide availability as the network member to her. If these characteristics of a social network were shown as the background of network members, they could be really the sources of social support for the subjects.

In view of these points, we concluded that multigravidas and pregnant women belonging to extended families were likely to have a desirable quality of social network reflecting these backgrounds. Most of members perceived by multigravidas and pregnant women belonging to extended families might provide intimacy, assistance, stability, social integration, reliability, or enhanced self-worth because of a relationship of long duration. At the same time, they also might provide them adequate information, or esteem for them to perform in their new role as a mother

because of a new relationship with them. Additionally, multigravidas also could receive availability by their supportive members who frequently had contact with them.

On the contrary, primigravidas and pregnant women belonging to nuclear families had less desirable quality of social network than that of multigravidas and pregnant women belonging to extended families. The evidence was that roughly 60 to 70% of supportive members of them could be explained from only the number of supportive members who infrequently had contact with her. That is, primigravidas were not likely to have a frequent or available contact with members who lived a short distance from them and had a relationship for long duration. That is, most of primigravidas and pregnant women belonging to nuclear families hardly might receive satisfactory intimacy, assistance, stability, social integration, reliability, or enhanced self-worth, because of insufficient availability of social support. Pregnant women with such poor quality of social network were considered as high risk for emotional and behavioral problems both to mother and child. Therefore, midwives should be able to predict the risk or mental stress in child rearing due to shortage of social support. This intervention by midwives should especially take the form of social network enhancement in order to reshape their social identity as a mother during pregnancy. This will avoid child abuse through the establishment of necessary human network for isolated mothers.

In addition to these results mentioned above, seventeen percent of the total network members were considered to be a source of conflict and confusion especially for the pregnant woman because of the unreliability and irresponsibility of non-supportive members. Actually, in some cases, our subjects might perceive them as network members, in spite of infrequent contact with them, long distance from them or even in spite of non-supportiveness, for obligatory reasons. Generally, Japanese tend to participate even in human relationships that are obligatory and uncomfortable, because they do not want to cause hurt feelings. We had considered that the presence of such non-supportive members might not be unique to Japan. Researchers in U.S.A. (Barrera[2]; Hobbs[9, 10]; Mercer et al.[13]) also pointed out the existence of negative human network who are source of conflicts and confusions. However, few nursing studies were carried out on negative social network. Therefore, clarification of the existence of non-supportive members in this study warranted a further study focusing on comparison on the cultural and social background in Japan and U.S.A, the reasons for their existence, and the influence on the quality of social network.

CONCLUSION

In summary, the findings on the social network of the subjects in the study

were shown as follows:

1. 1) Our subjects perceived husbands and their mothers most important as supportive members.

   2) 10 to 20 % of our subjects perceived husbands' mothers, brothers, and even their friends as non-supportive members.

   3) Roughly 40 to 60 % of our subjects did not list husbands' fathers, brothers and fathers as network members.

2. Our subjects perceived the social network consisted of the mean size of 9.0 supportive members (SD=1.9), which was similar to that (8.5) reported in the USA by Cronenwett[7]. They also perceived 1.8 (SD=0.6) non-supportive members.

3. Multigravidas and pregnant women belonging to extended families were likely to have more desirable quality of social network, because of variability and availability, than that of primigravidas and pregnant women belonging to nuclear families.

We concluded that pregnant women in Japan, especially primigravidas and pregnant women belonging to nuclear family, had poor quality of social support network. Pregnant women with poor quality of social network were considered as high-risk for emotional and behavioral problems both to mother and child. Therefore, midwives should be able to predict the risk or mental stress in child rearing due to shortage of social support. This will avoid child abuse through the establishment of necessary human network for isolated mothers.

ACKNOWLEDGMENTS

REFERENCES

1. Barnes, J. A. 1972. Social networks. Reading. MA Addison-Wesley.

2. Barrera, M. 1981. Social support in the adjustment of pregnant adolescents: Assessment Issues, p. 69-96. *In* Gottlieb B. H.
   (ed.), Social networks and social support. Sage, Beverly Hills.

3. Bott, E. 1957. Family and social network: roles, norms and external relationships in ordinary urban families. Tavistock, London.

4. Bott, E. 1971. Family and social network: roles, norms and external relationships

in ordinary urban families. (2nd ed.), Tavistock, London.

5. Boissevain, J. and Mitchell, J. C. 1973. Network analysis: Studies in human interaction. The Hague, The Netherlands, Mouton.

6. Brandt, A. P. and Weinert, C. 1981. The PRQ—A social support measure. Nursing Research. 30: 277-280.

7. Cronenwett, L. R. 1985. Network structure, social support, and psychological outcomes of pregnancy. Nursing Research. 34: 93-99.

8. Gottlieb, B. H. 1978. The development and application of a classification scheme of informal helping behaviors. Canadian Journal of Behavioral Science. 10: 105 -115.

9. Hobbs, D. 1965. Parenthood as crisis: A third study. Journal of Marriage and the Family. 27: 367-372.

10. Hobbs, D. 1968. Transition to parenthood: A replication and extension. Journal of Marriage and the Family. 30: 413-417.

11. House, S. 1973. Occupational stress and heart disease. Journal of Health & Social Behavior. 15: 12-27.

12. Kita, A. 1997. Characteristics of the social support for pregnant Women in Japan —According to concept of four kinds of social support—. Journal of Japan Academy of Nursing Science. 17, 1: 8-21.

13. Mercer, R. T., Hackley, D. C., and Bostram, A. 1982. Factors having an impact on maternal role attainment the first year of motherhood.

14. Minami, H. 1986. Development and examination of amae network questionnaire. The Japanese Journal of Nursing Research. 9: 211-219.

15. Minami, H. 1986. Social support network. Behavioral Science of Health and Disease, Medical Friend Co. 88-107.

16. Norbeck, J. S., Lindsey, A. M., and Carrieri, V. L. 1983. Further development of the Norbeck social support questionnaire: Normative data and validity testing. Nursing Research. 32, 1: 4-9.

17. Norbeck, J. S., Dejoseph, J. F., and Smith, R. T. 1996. A randomized trial of an empirically derived social support. Intervention to prevent low birth weight among African American women. Soc. Sci. Med. 43, 6: 947- 954.

18. Walker, K. N., Macbride, A., and Vachon, M. L. S. 1977. Social support networks and the crisis of bereavement. Social Science and Medicine. 11: 35-41.