Factors associated with skills of health visitors in maternal-infant mental health in Japan

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SUMMARY	This study is a formative evaluation of a training seminar for health visitors, who visit mothers to provide them with support in terms of postpartum mental health, and was performed to examine factors that relate to the skills of these health visitors. Subjects were all health visitors (n = 232) from around Japan who participated in a 2-day training seminar. One-hundred and thirty-three valid responses (57.3%) were received and written consent to participate in the research was obtained. Results of statistical analyses indicated that a health visitor's skill at supporting a mother in terms of postpartum mental health had two domains, such as interpersonal health care skills and skill at formulating measures. In addition to the length of experience ($p < 0.001$), the level of expertise ($p < 0.001$) and the total score on the Generalized Self-Efficacy Scale ($p < 0.1$ for interpersonal health care skills) was related to a higher level of the health visitor's skill at supporting mothers in terms of their postpartum mental health. In contrast, having a university degree ($p < 0.1$) was related to a lower level of the health visitor's interpersonal health care skills. Therefore, a training seminar aimed at promoting the skills of health visitors must provide them with the latest expertise and encourage their self-efficacy by helping them successfully envision supporting mothers in terms of their postpartum mental health. In addition, careful instruction of health visitors with less experience and a university degree is crucial.

Key Words: Community mental health, home visits, maternal-child health, nursing skills, public health nurse

Introduction

Among the tasks related to assessing the postpartum mental health of mothers, early detection of postpartum depression is vital. Postpartum depression is a depressive disorder found in women after childbirth and develops within one year after childbirth at a high rate, reaching 10-15% in various countries (*1-3*). Although the period when it most frequently develops has been described as 4-6 weeks after childbirth, recent work has found that the disease most often occurs even earlier, *i.e.* a couple of weeks after childbirth (*4,5*). As

well as having a negative impact on the child-rearing ability of family members and the infant's development (*6*), postpartum depression is considered to be a risk factor for infant abuse (*7*). The Japanese Ministry of Health, Labor, and Welfare has designated a decrease in the incidence of postpartum depression and mortality due to child abuse as a major objective of its project named "Sukoyaka Oyako 21 (Sukoyaka Family 21: Sukoyaka means 'sound' or 'well-being')." There is an urgent need to establish measurements, including early screening of postpartum depression, to prevent inappropriate child care or infant abuse.

As part of the Japanese maternal and child health system, a program of visits to new mothers by health visitors, mainly from health and welfare centers in the community, may have contributed to a decrease in mothers' anxieties about child rearing (*8,9*). Improving

the skills of health visitors, who visit mothers to provide support in terms of their postpartum mental health should prove to be a practical and effective way of early screening for postpartum depression and preventing infant abuse.

The Edinburgh Postnatal Depression Scale (EPDS) is a self-administered questionnaire developed by Cox *et al*. (*10*) for population-based screening of postpartum depression. Research has shown that use of this questionnaire can increase the population-based rate of detection of postpartum depression.

Yoshida confirmed the usefulness of having health visitors who perform postnatal visits utilize the EPDS (*10,11*) and the Bonding Questionnaire (Marks, unpublished) (*12*) in combination with a short self-constructed questionnaire in order to determine high risks for postpartum depression and infant abuse, including socioeconomical items (*3,12*). In 2004, a child-rearing support manual based on these three types of questionnaires was developed through Grants for Health Science (Research on Children and Families) (*13*), and the manual was freely distributed to 127 main branches of maternal and child health organizations in Japan (in 47 prefectures, 13 government-designated cities, 9 public health center-designated cities and 23 wards of Tokyo). In addition, a training seminar using this child-rearing support manual was initiated in 2005 for health visitors who make postnatal visits.

To ensure the validity of the training seminar, factors related to the skills of health visitors who provide mental assessments and provide care support for postnatal mothers and their families in the community must be determined. Thus, the purpose of this study was to explore factors related to the skills of such health visitors.
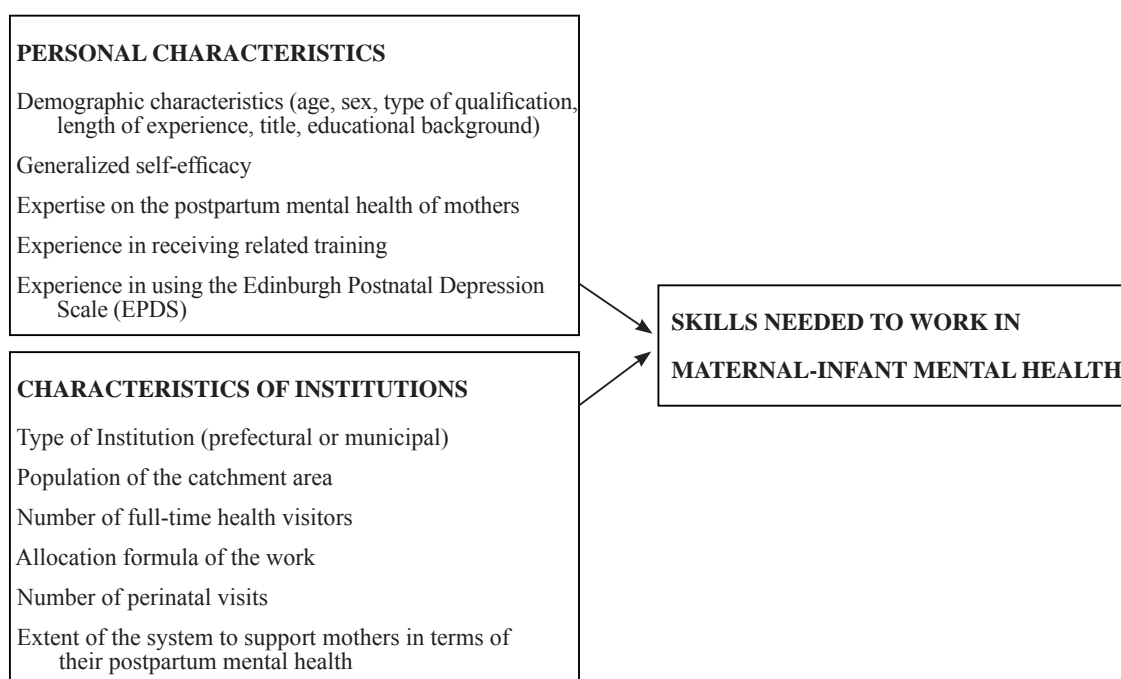
Methods

Participants and procedures

Subjects were 232 health visitors who participated in a 2-day training seminar held in August and September 2005 in Tokyo and Fukuoka, respectively (*14*). Subjects came from Tokyo, Fukuoka, and 37 other prefectures. An oral explanation of the objective of the research was provided on the day of the seminar. In addition, the fact that the signed questionnaires would be strictly managed and published without identifying individuals and the institutions where they worked was explained. Subjects were sent self-administered questionnaires by mail in December 2005. Written consent to participate in the research was obtained.

Measures

Skill at supporting mothers in terms of their postpartum mental health is assumed to be related to the characteristics of individual health visitors, such as the length of experience and the characteristics of the institutions where they work, such as the establishment of postnatal visits using the EPDS as a business operation (Figure 1).

Such skills were assumed to consist of a series of processes through which health visitors support mothers after childbirth and the process of planning measures. Specifically, a process was designed in which

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PERSONAL CHARACTERISTICS

Demographic characteristics (age, sex, type of qualification, length of experience, title, educational background)

Generalized self-efficacy

Expertise on the postpartum mental health of mothers

Experience in receiving related training

Experience in using the Edinburgh Postnatal Depression Scale (EPDS)

CHARACTERISTICS OF INSTITUTIONS

Type of Institution (prefectural or municipal)

Population of the catchment area

Number of full-time health visitors

Allocation formula of the work

Number of perinatal visits

Extent of the system to support mothers in terms of their postpartum mental health

SKILLS NEEDED TO WORK IN MATERNAL-INFANT MENTAL HEALTH

Figure 1. Model of factors potentially associated with skills of health visitors working in maternal-infant mental health.

health visitors conducted perinatal visits, interviewed the mothers using the three types of self-administered questionnaires, performed assessment and provided support, cooperated with other institutions as needed, collected data, and developed measures (*15*). Referring to the questionnaire developed by Elliott *et al*. (*16*) and Saeki *et al*. (*17,18*), a self-reported questionnaire was also developed using 11 questions with a 4 point Likert scale, with points ranging from 1 (insufficient) to 4 (sufficient) to evaluate the skills specific to support for mothers in terms of their postpartum mental health (hereinafter referred to as the skill scale).

Questions regarding personal characteristics were administered to identify demographic characteristics (age, sex, type of qualification, length of experience, title, and educational background), experience in receiving related training, experience in using the EPDS, and the time at which use of the EPDS commenced, as well as generalized self-efficacy and self-evaluation of expertise.

Self-evaluation of expertise was done with a self-reported questionnaire with 15 questions prepared with reference to the questionnaire developed by Elliott *et al*. (*16*) and the child-rearing support manual (*13*). The questionnaire had a 4 point Likert scale, with points ranging from 1 (not know at all) to 4 (well know) (hereinafter referred to as the expertise scale).

Self-efficacy is one of the core concepts of Bandura's social cognitive theory (*19*). It shows a cognitive tendency to consider that one's own judgment and effort contribute to success. This concept has been used not only to clinically evaluate the self-management behavior of patients with chronic diseases but also to improve the skills of specialists. Although many case-specific self-efficacy scales have been developed, the current study used the Generalized Self-Efficacy Scale, which was developed by Sherer (*20*) and translated into Japanese by Narita *et al*. (*21*), to measure generalized self-efficacy as a characteristic, cognitive tendency. The scale included a questionnaire with 23 items using a 5-point Likert scale.

Questions regarding the characteristics of the institutions where the health visitors work were administered using six items, such as the type of institution (municipal or prefectural), population in the catchment area, number of full-time health visitors, formula for allocation of work, level of activity (number of mothers and children to visit) and evaluation of the system of operations (hereinafter referred to as the scale of operations).

Design

Exploratory factor analysis was performed after calculating descriptive statistics in order to examine the validity of the skill scale prepared for this study. Multiple linear regression analysis was subsequently

performed to investigate the factors related to the skills of health visitors, with the points on the skill scale serving as dependent variables. For the points on the skill scale, ANOVA and the test of significance for Spearman's correlation coefficient were performed regarding individual factors, in which individual factors were selected as independent variables when the individual F value was $p < 0.2$. Taking multicollinearity into account, selected valuables were used for multiple linear regression analysis, excluding outliers. Using the step-down procedure, a model with maximum explanatory power (adjusted R^2) was determined. Statistical analyses were conducted using SPSS 12.0 J for Windows.

Results

Characteristics of participants (Table 1)

There were 133 valid responses (valid response rate: 57.3%). The personal characteristics of the participants were as follows: all of them were female, average age was 38.5 ± 9.0 years, they included 123 public health nurses (92.5%) with various lengths of experience, 27 participants (20.3%) had titles such as manager or assistant manager, and 26 (19.5%) had an educational background that included university/graduate school. The average and standard deviation of the Generalized Self-Efficacy Scale were 79.1 ± 9.83, and Cronbach's α in this study was 0.92. The average and standard deviation of the total scores on the expertise scale were 45.3 ± 6.54, and Cronbach's α was 0.94. Thirty-two participants (24.1%) answered "yes" regarding experience in attending related training seminars. In addition, 64 participants (48.1%) had experience using the EPDS.

The characteristics of the institutions where the participants worked were as follows: they included 40 prefectural health institutions (30.1%), and the median of population of the catchment area of the individual institution was 123,587 (a prefectural institution generally draws from 10 to 30 times the population drawn from by a municipal institution). The median number of full-time health visitors at each institution was 4.3. The level of a health visitor's activity was a median of 105 postnatal visits during the first half of FY2005. The average and standard deviation of the total scores for scale of operations was 8.92 ± 1.82, and Cronbach's α was 0.92.

Factor structure of the prepared skill scale and the new skill scale

As a result of factor analysis regarding the prepared skill scale, 2 factors were found to have converged (Table 2). Since the factor loading was greater than 0.4 for both factors regarding an item on the skill scale,

Table 1. Demographic data (*n* = 133)

		n (%)	mean ± SD/median (range)
Personal characteristics			
Age			mean: 38.5 ± 9.0 (23-57)
Type of qualification	Public health nurse	123 (92.5)	
	Other	6 (4.5)	
Years of experience	10 years or less	45 (33.8)	
	11-20	50 (37.6)	
	21-30	29 (21.8)	
	31-35	4 (3.0)	
Management position	With title	27 (20.3)	
	Without title	100 (75.2)	
Education	Training school	67 (50.4)	
	Junior college	26 (19.5)	
	University/graduate school	26 (19.5)	
	Other	8 (6.0)	
Generalized self efficacy scale			mean: 79.1 ± 9.83 (40-107)
Expertise scale			mean: 45.3 ± 6.54 (28-60)
Experience of related training	Yes	32 (24.1)	
	No	99 (74.4)	
Experience of using EPDS	Yes	64 (48.1)	
	Used before March 31, 2005	*23 (35.9)*	
	Used since April 1, 2005	*40 (62.5)*	
	No	62 (46.6)	
Characteristics of Institutions			
Type of Institutions	Prefectural health institutions	40 (30.1)	
	Municipal health institutions	89 (66.9)	
Population of catchment area			median: 123,587 (1,578-3,790,000)
Number of full-time health visitors			median: 4.3 (1-166)
Allocation formula of the work	Allocation by assigned district	28 (21.1)	
	Allocation by health problem characteristics	45 (33.8)	
	Allocation with features of above-mentioned two formulae	51 (38.3)	
Number of perinatal visits during the first half of FY2005			median: 105 (0-2,160)
Operation scale			mean: 8.92 ± 1.82 (4-12)

"skill at presenting an assessment and support plan for colleagues or persons in other jobs," this item was excluded; the remaining 10 items were regarded as the new set of items for the skill scale (hereinafter referred to as the new skill scale). The average and standard deviation of the total score on the new skill scale were 23.4 ± 4.89. The first (6 items) and second (4 items) factors were interpersonal health care skills and skill at formulating measures, respectively. Cronbach's α for the total, first, and second factors was 0.92, 0.90, and 0.89, respectively.

Factors related to the skills

Multiple linear regression analysis was performed with the whole sum of scores of the new skill scale, the total score of interpersonal health care skills, and the total score for skill at formulating measures as dependent variables, respectively. Independent variables were selected based on the aforementioned standard model, along with 4 variables, including the type of institution where a health visitor worked, size of the catchment

Table 2. The new skill scale

	Factor 1	Factor 2
Skill at interviewing to assess risk of postpartum depression	**0.823**	-0.102
Skill at interviewing to assess risk of infant abuse	**0.859**	-0.051
Skill at making a care plan based on assessments of postpartum mental health of mothers	**0.588**	0.272
Skill at caring for postpartum mothers and their families	**0.852**	-0.081
Skill at cooperating with other institutions as needed for care	**0.467**	0.325
Skill at assessing outcomes of care	**0.568**	0.290
Skill at sharing learned expertise and skills at an institution	0.060	**0.771**
Skill at modifying and improving ways of care conducted in an institution	0.020	**0.876**
Skill at accumulating data and analyzing a database	-0.077	**0.788**
Skill at creating a project proposal and developing measures	-0.053	**0.859**

Factor analysis by least squares without weight, and promax rotation.
Factor 1: interpersonal health care skills
Factor 2: skill at formulating measures

area, number of full-time health visitors, and the total score for the scale of operations as part of the characteristics of institutions, in addition to 7 variables, such as length of experience, title, educational background, the total score on the Generalized Self-Efficacy Scale, the total score on the expertise scale, experience in receiving related training, and experience in using the EPDS as part of the characteristics of individual health visitors, where the dependent variable was the whole sum of scores on the new skill scale. In the same manner as for the whole sum of scores on the new skill scale, when the dependent variable was the total score for interpersonal health care skills, the independent variables were the 4 variables for the characteristics of institutions and the 7 variables for the characteristics of individual health visitors. Lastly, when the dependent variable was the total score for skill at formulating measures, the independent variables were only 2 variables, such as the type of institution where a health visitor worked and the total score for the scale of operations as part of the characteristics of institutions, and the aforementioned 7 variables as part of the characteristics of individual health visitors. For educational background, graduation from universities/graduate schools served as an independent variable, taking into consideration future trends for the organization of mother-infant support systems and the training of public health nurses.

The independent variables that were commonly found to be significant with respect to the three dependent variables were length of experience and the total score on the expertise scale ($p < 0.001$) as part of the characteristics of individual health visitors (Table 3). In addition, the population of the catchment area ($p < 0.05$) as part of the characteristics of institutions explained the total score on the new skill scale, while the number of full-time health visitors ($p < 0.01$) as part of the characteristics of institutions and educational background ($p < 0.1$) and the total score on the Generalized Self-Efficacy Scale ($p < 0.1$) as part of the characteristics of individual health visitors explained the interpersonal health care skills.

Discussion

Measurement scale for skills

Elliott *et al.* (*16*), who developed an intervention program for health visitors, prepared a self-evaluated scale using 11 items regarding expertise and 9 items regarding skills to evaluate the improvement of the skills of health visitors. However, they did not evaluate the validity and reliability of their scale. One large difference between the current scale and the scale of Elliott *et al.* (*16*) in terms of evaluating the skills of health visitors is the fact that only interpersonal health care skills were evaluated in the scale of Elliott *et al.*, whereas the current scale went as far as evaluating skill at formulating measures. The sub-scale for formulating measures includes the skill to encourage maternal and child mental health care activities and establish measures to improve the mental health of mothers and children in individual communities.

This dissimilarity was a consequence of differences between Japan and the UK in terms of the community health system, and especially in the role of health visitors. In the UK, the responsibility of health visitors as specialists has been clearly established so that health visitors are responsible for providing interpersonal care to local residents and the primary care trust (PCT) and the National Health Service (NHS) trust are responsible for developing health care measures. In Japan, health visitors like the current participants are responsible for both providing individual care and establishing health care measures (*15*). That is, in Japan the individual health visitor, or public health nurse, performs a dual role of identifying issues regarding health measures by providing interpersonal care in communities and of establishing health care measures.

In the US, the Quad Council of Public Health Nursing Organizations (*22*) stipulated the level of required proficiency (awareness, knowledge, or proficiency) for generalists/staff public health nurses (PHN) or managers/clinical nurse specialists (CNS)/program specialists/executives with regard to

Table 3. Linear regressions (beta) for skill total, interpersonal health care skills, and skill at formulating measures

Independent factors	Dependent factors		
	Skill total	Interpersonal health care skills	Skills at formulating measures
Personal characteristics			
Years of experience	0.511***	0.431***	0.488***
University degree	-	-0.157†	-
Experience using EPDS	0.082	-	-
Experience attending related training	-	-	0.095
Total score on expertise scale	0.315***	0.295***	0.300***
Total score on generalized self efficacy scale	0.106	0.131†	-
Characteristics of institutions			
Size of catchment area	0.158*	-	-
Number of full-time health visitors	-	0.231**	-
Total score for scale of operations	-	-	0.088
Adjusted R^2	0.462	0.460	0.377

*** Statistically significant differences ($p < 0.001$), ** ($p < 0.01$), * ($p < 0.05$), † ($p < 0.1$).

the individual domains of individuals/families and populations/systems, respectively. These domains included 8 domains, such as communication skills, analytic assessment skills, financial planning and management skills. Cross *et al.* (*23*) devised an instrument to measure changes in public health nursing competency, and its validity has long been established. Several investigations have been performed to clarify the competencies expected of public health nurses in Japan (*24,25*). Moreover, a scale to evaluate these competencies was developed by Saeki *et al.* (*17,18*). However, no investigations have been performed to clarify the skills required for postnatal visits and other maternal and child mental health activities. Although Nakaita *et al.* (*26*) conducted a study regarding self-evaluation by public health nurses in activities to prevent child abuse, they did not confirm the validity of the self-evaluation items used in the study.

Factor analysis of the prepared skill scale revealed that factors included interpersonal health care skills and skill at formulating measures, as previously assumed. For the item "skill at presenting an assessment and support plan," the factor loading of both factors was higher than 0.4. This may have been because the skill for this item serves as a bridge between interpersonal health care and formulating measures. Therefore, the item was considered to be necessary in evaluating the skills of health visitors but was excluded from the scale, and two factors were set as subscales. As a result, a new scale with 6 items for interpersonal health care skills and 4 items for skill at formulating measures was used for analysis. Factor analysis was performed again and Cronbach's α was calculated to confirm the construct validity and the internal reliability, respectively.

Factors related to skills

Qualitative and quantitative investigations have suggested that length of experience (*18,24,25*) and the institution where a health visitor works (prefectural health institution, municipal health center, *etc.*) (*24,26*) are factors related to the skills and competencies of health visitors. In the current study, the variable with the greatest explanatory power in two subscales and total score on the new skill scale was the length of experience among personal characteristics of health visitors. In addition, the total score on the expertise scale was the variable with secondary greatest explanatory power in two subscales and the total score on the new skill scale. This shows that health visitors with more expertise have greater skills even in comparison to those with the same length of experience.

In addition, a large population of the catchment area, part of the characteristics of institutions, indicated a high level of general skills. This may be related to the opportunities that health visitors have to accumulate experience while working with difficult cases or abundant social resources in such areas.

Health visitors who worked for institutions with a larger number of full-time health visitors had greater interpersonal health care skills. Their skills were believed to have improved through experience in which colleagues acted as a model to learn from, an advisor, or a support resource. In addition, interpersonal health care skills tended to be higher in health visitors with highly generalized self-efficacy. Those who believed in their potential were highly motivated, contributed to successes, continued to make an effort, and were flexible with respect to change (*27*). Such health visitors are believed to have greater skill in support activities provided to various types of households. Health visitors with a university degree tended to have lower interpersonal health care skills. This may be related to the recent difficultly university students have had in sufficiently undergoing practical training because the number of students seeking a license in public health nursing has exceeded the capacity of institutions for practical training in Japan.

A training seminar aimed at promoting the skills of health visitors who conduct home visits to support mothers in terms of their postpartum mental health must provide them with the latest expertise, based on reliable evidence, and encourage their self-efficacy by helping them successfully envision supporting mothers in terms of their postpartum mental health. In addition, this study revealed the importance of carefully instructing health visitors with less experience, a university degree, and who work in institutions with a small population in the catchment area and with a smaller number of full-time health visitors.

Conclusions

Results of exploring the factors related to the skills of health visitors who conducted home visits to support mothers in terms of their postpartum mental health were as follows:

1. The skills of health visitors who support mothers in terms of their postpartum mental health were found to have 2 domains, such as interpersonal health care skills and skill at formulating measures.

2. The most explanatory variable for the levels of interpersonal health care skills, skill at formulating measures, and the total skill in the 2 domains was the length of experience, followed by the level of expertise.

3. In addition, the population of the catchment area explained the total score for total skills, while the number of full-time health visitors, educational background, and total score on the Generalized Self-Efficacy Scale explained interpersonal health care skills.

Therefore, a training seminar aimed at promoting the skills of health visitors must provide them with the latest expertise and encourage their self-efficacy

by helping them successfully envision supporting mothers in terms of their postpartum mental health. In addition, careful instruction of health visitors with less experience and a university degree is crucial.

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