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ORIGINAL ARTICLE

Factors affecting burnout in female nurses who have preschool-age children

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Abstract

Aim: This prospective cohort study aims to clarify the factors affecting burnout in female nurses who have preschool-age children.

Methods: The subjects were 2151 female nurses who have preschool-age children and work at 70 city hospitals across Japan. The questionnaires were completed by 1644 female nurses with preschool-age children in October 2010, and they were divided into a cohort to observe the incidence of burnout, which was investigated in October 2011.

Results: At the baseline, the authors obtained responses from 1802 subjects (83.8%) who had agreed to join the study. The subjects the authors were able to investigate totaled 523, of whom 117 (22.4%) had experienced burnout. Multiple logistic regression analysis showed that influencing or predictive factors in burnout were years at the present workplace, will to continue work, assertiveness, overtime work, and spanking children.

Conclusion: Female nurses who have preschool-age children tend to burnout easily if they have been at their present workplace for less than 3 years, wish to quit working, respond to a child's misbehavior with spanking, are "very low" in assertiveness, or work 4–6 h of overtime per week.

Key words: burnout, child-rearing, city hospitals, female nurses, longitudinal study.

INTRODUCTION

In developed countries, the concept of work–life balance is considered important, and this concept has been newly implemented in the workplace for nurses in Japan. Managing both a job and child-rearing is a major challenge for women. It is reported that this is particularly difficult for nurses and that many nurses are susceptible to stress (Honma & Nakagawa, 2002).

Major symptoms of stress among women who have children include work–family conflict (Carlson, Kacmer, & Williams, 2000) associated with the challenge of holding a job while raising children; burnout (Maslach & Jackson, 1981) associated with work; and child-rearing stress (Loyd & Abidin, 1985) associated with raising children. Nursing is characterized as a particularly stressful vocation because human lives depend on it, it comes with a heavy burden of duties, and it is necessary to keep up with rapid advances in medical treatment (Yoshida, Morita, & Yamada, 2011). Emotional health is a crucial factor in maintaining a work–life balance, and work-related stress can affect one's personal life. In the present study, the authors examine burnout as a means of determining the stress in nurses who have children. Prevention of burnout will contribute to the emotional health of nurses and enhance their maintenance of a balance between work and child-rearing.

Maslach and Jackson (1986) defined burnout as "a syndrome of emotional exhaustion, depersonalization, and reduced personal accomplishment that can occur among individuals who do 'people-work' of some kind". Burnout involves both physical and mental

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exhaustion that can affect child-rearing and prevent one from maintaining a healthy work–life balance.

Factors influencing burnout are broadly categorized as personal factors (e.g. personal attributes, character traits) or environmental factors (e.g. working environment), with coping behavior employed to reduce stress, according to the general cause-and-effect model (Kubo, 2003). Lachman and Diamant (1987) note that circumstances relating to daily life outside the workplace must also be examined in seeking causes of burnout. Therefore, in the present study of nurses with children, the authors considered it necessary to examine the circumstances associated with child-rearing. Looking at existing research on nurses raising children, the authors found reports of insufficient time available to spend with children (Mikami, Takataya, Takato, Miyamoto, & Shijo, 2006; Mizumachi, Ide, Endo, & Urayama, 2008) and the need for spousal cooperation (Masamura, 2006; Mikami *et al*., 2006; Yata, Kishida, Ishikura, Miyazaki, & Yamaguchi, 2002). These reports suggest that in regard to child-rearing, studies of the state of mother–child relations and spousal support are needed.

One tool for evaluating parent–child relations, including support by the spouse, is evaluation of the child-care environment (Anme, 1996). This is based on Bronfenbrenner's (1979) concept of treating environments as ecological systems. There are material environments and human environments, which may affect children directly or indirectly. In regard to evaluation of the child-care environment, the above study applied Bronfenbrenner's theory of environmental systems to an examination of the human environment of "relations", in this case to ascertain the actual relationship between guardian and child and the state of spousal support. In the present study, the authors have used this evaluation tool to study child-rearing behavior and support as aspects of mother–child relations that are factors affecting burnout.

The aim of this study is to clarify the factors affecting burnout in female nurses who have preschool-age children (≤6 years) from personal factors, including child-rearing behavior and child-rearing support, environmental factors, and coping behavior, and to derive from these results knowledge that will contribute to the prevention of burnout.

METHODS

Subjects

Of the city hospitals in Japan listed in *Hospital Catalog 2003–2004* (Health Policy Study Association, 2003), all 308 hospitals with more than 200 beds excluding psychiatric hospitals were enrolled in the study. The primary survey was conducted by mailing a questionnaire with return postage to the director of the nursing service department at each hospital to ascertain employment and support for child-rearing by female nurses with preschool-age children. Valid responses were obtained from 112 directors, with 70 agreeing to participate in a further study. The subjects in this study were 2151 female nurses who have preschool-age children.

Measurements

Personal factors

Nurse attributes. Information was collected on age, birth date, the first child's birth date, number and age of children, cohabitant attributes, spouse's presence or job assignment-related absence, specialization (general nursing, public health, or maternity), working field (ward, outpatient department, operation room), working arrangements (full-time, part-time), years of experience as a nurse, years at the present workplace, employment status (employed at the present hospital, at another hospital, or unemployed) at the time of birth of the youngest child, application of child-care leave, child-care time and day-care center use, and commute time.

Items related to self or children. Based on the survey items in Demir, Ulusoy, and Ulusoy (2003), the present authors asked the following questions: "Do you personally have health problems?", "Do your children have health problems?", and "Do you worry about your children's growth or development?". The authors asked subjects to select one of the following responses to each: "a lot", "some", "not much", and "not at all".

Regarding self-efficacy as negatively evaluated by lack of confidence in child-rearing, the present authors referred to survey items in Anme and Segal (2004), and asked, "Do you ever feel a loss of confidence in your child-rearing ability while raising your children?". The present authors asked subjects to select one of the following responses: "often", "sometimes", "rarely", and "never". Regarding the will to continue working, the present authors referred to survey items in Suzuki, Kanoya, Katsuki, and Sato (2006), and asked, "Do you want to continue working?". The authors asked subjects to select one of the following responses: "yes", "I'm not sure", and "I want to quit".

Child-rearing behavior and support. To provide indicators of child-rearing behavior and support, subjects completed questionnaires for evaluation of the child-care environment (Anme, 1996).

The questionnaires were composed of four categories: human stimulation, refraining from restrictions or punishment, social stimulation, and social support. Human stimulation consisted of five items: (i) play with child; (ii) reading books; (iii) singing songs together; (iv) meals with family; and (v) child-rearing by spouse. Refraining from restrictions or punishment consisted of two items: (vi) appropriate response to misbehavior; and (vii) punishment. Social stimulation consisted of three items: (viii) going to the grocery store with child; (ix) going to the park with child; and (x) going to friends' houses with child. Social support consisted of three items: (xi) support for child care; (xii) having consultations; and (xiii) talking with spouse about child.

To determine the frequency of human stimulation and social stimulation, the authors sought responses on a 5 point scale from "almost never" to "nearly every day". To determine the degree of appropriate response to misbehavior under "refraining from restrictions", the authors asked, "What do you do if your child spills milk on purpose?". The authors asked subjects to select one of the following responses: "I spank the child", "I verbally scold the child", "I find some way to let the child know the behavior was wrong", and "I think of some other way to prevent the child from spilling milk". For punishment, the authors asked about the frequency of child spanking on a 5 point scale from "never" to "nearly every day". For support for child care and having consultations under "support", the authors asked about their presence/absence and attributes. As attributes, the authors asked for multiple responses among the following: spouse (or equivalent partner), mother or father, mother-in-law or father-in-law, brother or sister, friend, relative, neighbor, baby-sitter, and preschool or day-care center staff. For "talking with spouse about child", the authors asked about frequency on a 5 point scale from "almost never" to "nearly every day".

Assertiveness/commitment/mental health. To ascertain assertiveness, the authors asked, "Are you someone who is able to speak their mind?". For commitment, the authors asked, "Are you able to find meaning in your work that makes it feel worthwhile?". For mental health, the authors asked, "Do you often feel depressed?". The authors asked for responses using a visual analog scale ranging from 0 ("not at all") to 100 "very much so".

Environmental factors

Working environment. Regarding tolerance for child-rearing by the workplace, each subject was asked, "Does your workplace show understanding about child-rearing?" They were given possible responses of "very much", "somewhat", "not much", or "not at all". For salary, each subject was asked, "Are you satisfied with your salary?". The possible choices were "very satisfied", "largely satisfied", "slightly dissatisfied", or "very dissatisfied". Subjects were also asked to describe their workload, with the possible responses "very high", "slightly high", "slightly low", or "very low". The amount of overtime per week was classified into "no overtime", "1–3 h", "4–6 h", "7–9 h", and "10 h or more". For frequency of night shifts, the authors asked about the number of night shifts per month.

Amount of housework. To ascertain the amount of housework, the authors asked, "Do you feel that you do much housework?" with possible responses on a 4 point scale ranging from "very much" to "very little".

Coping behavior

Consultants on work issues. With regard to consultants on work issues, each subject was asked whether or not she has anyone to talk to about concerns or problems on the job. Each subject was asked to identify individuals with whom she could talk about these issues from among the following: "any person", "peers", "senior nursing staff", "boss", and "friends and family members".

Coping mechanisms. Questions about coping mechanisms were prepared based on the coping taxonomy developed by Pine and Kafry (1982). Each subject was asked, "When you experience difficulties, concerns or problems at the workplace, which of the following four actions would you most likely take?". The choices were "talk things over with the parties involved", "change my own behavior and actions that caused the problem", "focus on unrelated matters", or "rely on alcohol or drugs".

Burnout

For the present study, the authors used the Japanese version of the Maslach Burnout Inventory (MBI), which was described and verified for reliability and validity by Higashiguchi *et al*. (1998) based on the original scale developed by Maslach and Jackson (1981). It consists of three subscales: (i) physical exhaustion; (ii) emotional exhaustion; and (iii) personal accomplishment. The original scale assesses the intensity and frequency of 25 items; Suzuki *et al*. (2004) assessed the reliability and practicality of rating the frequency of 22 of these, and the present study follows that format. The score for each subscale was determined by grading frequencies of seven

scores from 0 to 6 points and dividing the total score by the number of questions. The total MBI score proposed by Lewiston, Conley, and Blessing-Moore (1981) was also calculated as follows: (mean score of physical exhaustion + mean score of emotional exhaustion – mean score of personal accomplishment + 10). In many other studies (Bourbonnais, Comeau, Vezina, & Dion, 1998; Inaoka, 1988), the definition of burnout is applied to subjects with MBI scores in the highest tertile; therefore, the present authors have defined subjects with total MBI scores in the highest tertile as experiencing burnout.

Procedure

In October 2010 (baseline research), a self-administered questionnaire was mailed to each subject, who was asked to return the completed form anonymously to a designated box installed in each hospital. For the baseline study, female nurses with preschool children and with a burnout score of 12.14 or more points, approximately 33% of the subjects (high score) were excluded as experiencing burnout. The 1096 subjects who had scores under 12.14 were followed until October 2011. The number of subjects whose scores rose to 12.14 points or more was defined as the incidence of burnout in 2011.

The details of the questionnaires were completely the same in 2010 and 2011. The baseline data and the data in October 2011, including birth date and the first child's birth date, were collated. The necessity of reporting the birth date for the follow-up survey was explained to the subjects.

Statistical analysis

The subjects were divided into a burnout group and a no-burnout group in October 2011. Multiple logistic regression analysis (variable augmentation method: likelihood ratio) was conducted by assuming variables at the baseline as independent variables, and whether or not burnout syndrome was manifest was the dependent variable. As preliminary steps before multiple logistic regression analysis, the authors verified multicollinearity and narrowed down the independent variables. To verify multicollinearity the authors analyzed the correlation matrix between independent variables and, where there was an extremely high correlation coefficient, deleted one variable or the other. To narrow down the independent variables, the authors conducted a χ^2-test for bivariate analysis to extract significant variables.

For all analysis, degrees of assertiveness, commitment, and mental health were assessed along a visual analog scale ranging 0–100 mm. Though these are continuous variables, in order to identify general tendencies, the authors used an interval scale divided into four levels: "very low" (0–25 mm), "somewhat low" (26–50 mm), "somewhat high" (51–75 mm), and "very high" (76–100 mm). For age, the authors used two values, "twenties" and "thirties", representing periods that are commonly understood to differ in terms of human experience, physical and mental stamina, and so on. For years of experience as a nurse, the authors used two values, "7 years or more" and "less than 7 years," based on the assumption that it takes at least 3 years for a nurse to become accustomed to her job, and as much as 7 years to attain the status of a seasoned professional, during which period she might take leave for childbirth or child-rearing. As for years at the present workplace, the authors used the values "3 years or more" and "less than 3 years" based on the experiences of the co-authors and other nurses of their acquaintance with respect to the criteria of gaining familiarity with one's job and cultivating relationships with other staff. For other variables, the authors simply applied the choices provided for answers to the survey questions, and for nominal scales the authors created dummy variables. PASW SPSS version 18.0 (SPSS, Chicago, IL, USA) was used for the analysis.

Ethical considerations

The cooperation of the director of the nursing service department at each hospital was requested by explaining the purpose of this study orally and in writing. The study objectives and methods were explained to the participating nurses in writing; they were informed that their anonymity would be guaranteed, that their participation and withdrawal would be of their own free will, and that refusal to participate or withdrawal of consent would not result in any negative consequence. The authors stated that the study protocol would strictly follow the Declaration of Helsinki. The protocol of this study was approved by the ethics review committee of Nagano College of Nursing, Japan (No. 36, 17 March 2010).

RESULTS

In the baseline survey, the authors obtained 1644 valid responses (response rate: 92.3%) from female nurses who have preschool-age children, working in 70 hospitals established by cities and towns across Japan.

By excluding nurses whose total MBI score was in the top one third or higher (≥12.14 points), a cohort was set

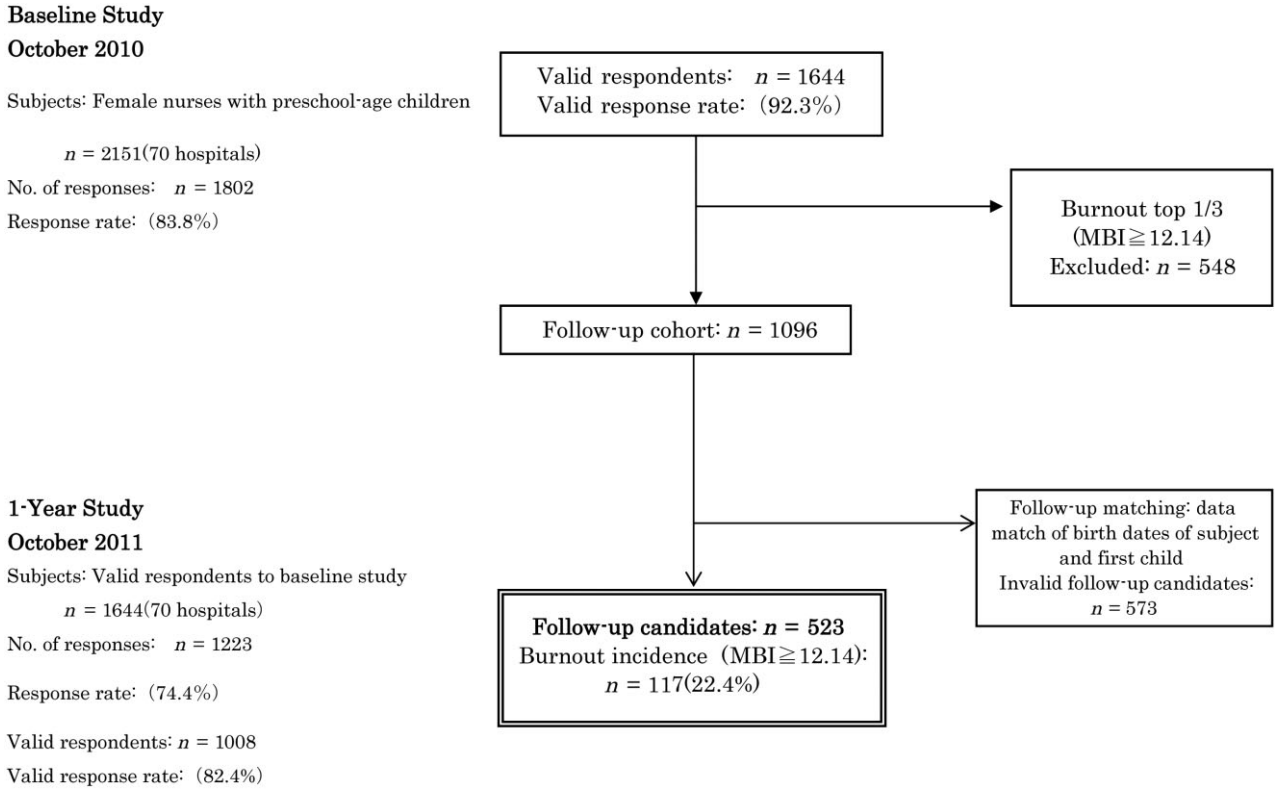

Figure 1 Flow chart of sampling procedure. MBI, Maslach Burnout Inventory.

Table 1 Average MBI scores and ages of burnout and no-burnout groups

	Burnout group (n = 117)			No-burnout group (n = 406)			All (n = 523)		
	Maximum	Minimum	Average (±SD)	Maximum	Minimum	Average (±SD)	Maximum	Minimum	Average (±SD)
Age	48	24	33.5 (±4.64)	47	24	34.2 (±4.54)	48	24	34.0 (±4.57)
MBI score	16.25	12.17	13.15 (±0.88)	12.13	5.75	9.90 (±1.37)	16.25	5.75	10.63 (±1.86)

MBI, Maslach Burnout Inventory; SD, standard deviation.

up (n = 1096). In the survey conducted in October 2011, the number of valid responses after excluding those that were incomplete or duplicated was 1008 (82.4%). After matching the responses obtained in the baseline survey with the survey in October 2011, the number of nurses that were eligible for a follow-up survey was 523 (47.3%), and the burnout syndrome group had 117 nurses (22.4%) (see Fig. 1). The average total MBI scores and ages of subjects in the burnout and no-burnout groups are shown in Table 1.

In verifying multicollinearity, the authors did not find extremely strong correlations on the order of 0.9 or higher in the correlation coefficients between independent variables, neither did the authors find fairly strong correlations of 0.7 or higher. Tables 2–4 show significant variables as determined by the χ^2-test. Significant variables for personal factors were as follows. Attributes: years at the present workplace ($P < 0.01$) and application of child-care time ($0.01 < P < 0.05$). Items related to self or children: lack of confidence in child-rearing ($P < 0.01$) and will to continue working ($P < 0.01$). Child-rearing behavior and support: in the human stimulation category, opportunities for play with child, ($0.01 < P < 0.05$), frequency of cooperation by

Table 2 Personal factors and burnout syndrome

		No. of subjects ($n = 523$)	Burnout syndrome ($n = 117$)	(%)	d.f.	χ^2
Attributes						
Years at present workplace	≥3	457	91	(19.9)	1	12.60**
	<3	66	26	(39.4)		
Application of child-care time	Yes	151	24	(15.9)	1	5.13*
	No	372	93	(25.0)		
Items related to self or children						
Lack of confidence in child-rearing	Often	63	23	(36.5)	3	13.49**
	Sometimes	291	69	(23.7)		
	Rarely	143	20	(14.0)		
	Never	26	5	(19.2)		
Will to continue working	Yes	389	70	(18.0)	2	30.92**
	Not sure	115	34	(29.6)		
	Want to quit	19	13	(68.4)		
Child-rearing behavior and support						
Human stimulation						
Opportunities for play with child	Almost never	22	9	(40.9)	4	11.34*
	1 or 2 times/week	225	56	(24.9)		
	3 or 4 times/week	107	27	(23.1)		
	5 or 6 times/week	43	7	(16.3)		
	Nearly every day	126	18	(14.3)		
Frequency of cooperation by spouse	Almost never	30	14	(46.7)	4	20.22**
	1 or 2 times/month	47	18	(38.3)		
	1 or 2 times/week	95	16	(16.8)		
	3 or 4 times/week	61	12	(19.7)		
	Nearly every day	290	57	(19.7)		
Opportunities for meals with family	Almost never	10	6	(60.0)	4	13.98**
	1 or 2 times/month	26	10	(38.5)		
	1 or 2 times/week	116	28	(24.1)		
	3 or 4 times/week	146	27	(18.5)		
	Nearly every day	225	46	(20.4)		
Refraining from restrictions or punishment						
Response to child's misbehavior	Spank child	26	16	(61.5)	4	27.54**
	Verbally scold child	352	79	(22.4)		
	Find some way to let child know behavior is wrong	77	10	(13.0)		
	Think of another way to prevent child from spilling milk	68	12	(17.6)		
Social stimulation	Almost never	12	4	(33.3)	4	10.76*
Opportunities to go to the store	1 or 2 times/month	90	29	(32.2)		
	1 or 2 times/week	329	72	(21.9)		
	3 or 4 times/week	79	11	(13.9)		
	Nearly every day	13	1	(7.7)		
Social support	Yes	519	114	(22.0)	1	6.43*
Presence of child-rearing consultants	No	4	3	(75.0)		
	Yes	15	0	(0.0)	1	4.45*
Neighbor as child-rearing consultant	No	508	117	(23.0)		
Assertiveness	Very low (0–25)	109	40	(36.7)	3	18.65**
Ability to assert oneself	Somewhat low (26–50)	160	34	(21.3)		
	Somewhat high (51–75)	180	27	(15.0)		
	Very high (76–100)	74	16	(21.6)		
Commitment	Very low (0–25)	37	13	(35.1)	3	15.33**
Sense of meaning in work	Somewhat low (26–50)	137	43	(31.4)		
	Somewhat high (51–75)	253	47	(18.6)		
	Very high (76–100)	96	14	(14.6)		
Mental health	Very low (0–25)	83	10	(12.0)	3	11.56**
Frequency of depressed feelings	Somewhat low (26–50)	194	37	(19.1)		
	Somewhat high (51–75)	164	47	(28.7)		
	Very high (76–100)	82	23	(28.0)		

*$0.01 < P < 0.05$; **$P < 0.01$.
d.f., degrees of freedom.

Table 3 Environmental factors and burnout syndrome

		No. of subjects ($n = 523$)	Burnout syndrome ($n = 117$)	(%)	d.f.	χ^2
Working environment						
Understanding in the workplace	Very much	135	19	(14.1)	3	7.93*
	Somewhat	319	78	(24.5)		
	Not much	58	16	(27.6)		
	Not at all	11	4	(36.4)		
Overtime per week	None	101	10	(9.7)	4	38.68**
	1–3 h	281	51	(18.1)		
	4–6 h	122	46	(37.7)		
	7–9 h	14	7	(50.0)		
	≥10 h	5	3	(60.0)		
Workload	Slightly low + very low (3)	64	7	(11.0)	2	9.29**
	Slightly high	394	88	(22.3)		
	Very high	65	22	(33.8)		

*$0.01 < P < 0.05$; **$P < 0.01$.
d.f., degrees of freedom.

Table 4 Coping behavior and burnout syndrome

		No. of subjects ($n = 523$)	Burnout syndrome ($n = 117$)	(%)	d.f.	χ^2
Consultants on work issues						
Boss as consultant	Yes	159	25	(15.7)	1	5.81*
	No	364	92	(25.3)		
Coping mechanisms						
	Talk things over	166	26	(15.7)	3	22.24**
	Change own behavior	282	62	(22.0)		
	Focus on unrelated matters	63	21	(33.3)		
	Rely on alcohol or drugs	12	8	(66.7)		

*$0.01 < P < 0.05$ **$P < 0.01$.
d.f., degrees of freedom.

spouse ($P < 0.01$), and opportunities for meals with family ($P < 0.01$); in the refraining from restrictions or punishment category, response to child's misbehavior ($P < 0.01$); in the social stimulation category, opportunities to go to the store ($0.01 < P < 0.05$); in the social support category, presence of child-rearing consultations ($0.01 < P < 0.05$) and of neighbor as child-rearing consultant ($0.01 < P < 0.05$); assertiveness ($P < 0.01$), commitment ($P < 0.01$), and mental health ($P < 0.01$).

Significant variables for environmental factors were: understanding in the workplace ($0.01 < P < 0.05$), overtime work ($P < 0.01$), and workload ($P < 0.01$).

Significant variables for coping behavior were: boss as consultant on work issues ($0.01 < P < 0.05$) and coping mechanisms ($P < 0.01$).

Based on the multiple logistic regression analysis, personal factors determined to influence burnout included: less than 3 years experience at the present workplace, which is a subcategory of attributes ($0.01 < P < 0.05$). Outside of attributes, the following factors were also found: nurses who want to quit their job ($P < 0.01$) ("will to continue work"), "assertiveness" ($0.01 < P < 0.05$), and "having experienced spanking one's child" ($P < 0.01$) ("response to child's misbehavior", a subcategory of refraining from restrictions or punishment in child-rearing behavior). Environmental factors that affected burnout included: 4–6 h/week ($P < 0.01$) of overtime work, a subcategory of working environment (see Table 5).

The risk of experiencing burnout ("burnout risk") for nurses who had 3 years or more experience at the present workplace was 0.46 times (95% confidence interval: 0.24–0.87) that of those who had less than 3

Table 5 Influencing or predictive factors in burnout according to multiple logistic regression analysis

		Odds ratio	95% confidence interval		
Personal factors					
Attributes					
Years at present workplace	<3	1.00			
	≥3	0.46	0.24	–	0.87*
Items related to self or children					
Will to continue working	Yes	1.00			
	Not sure	1.50	0.88	–	2.55
	Want to quit	7.50	2.46	–	22.84**
Assertiveness	Very low (0–25)	1.00			
	Somewhat low (26–50)	0.47	0.26	–	0.86**
	Somewhat high (51–75)	0.34	0.18	–	0.64**
	Very high (76–100)	0.50	0.24	–	1.07
Child-rearing behavior (refraining from restrictions or punishment)					
Response to child's misbehavior	Find some way to let child know behavior is wrong	1.00			
	Think of another way to prevent child from spilling milk	1.57	0.59	–	4.19
	Verbally scold child	1.82	0.86	–	3.86
	Spank child	6.53	2.13	–	20.01**
Environmental factors					
Working environment					
Overtime work	None	1.00			
	1–3 h/week	1.35	0.63	–	2.89
	4–6 h/week	4.11	1.88	–	8.99**
	7–9 h/week	4.07	0.98	–	16.85
	≥10 h/week	3.47	0.41	–	29.46

*$0.01 < P < 0.05$; **$P < 0.01$.

years experience. Regarding the will to continue work, the burnout risk for nurses who wanted to quit their job was 7.50 times higher (95% confidence interval: 2.46–22.84) than for those who wanted to continue. Regarding assertiveness, the burnout risk for nurses who were slightly more assertive and who were slightly less assertive was 0.34 times (95% confidence interval: 0.18–0.64) and 0.47 times (95% confidence interval: 0.26–0.86) that of those who were extremely low in assertiveness, respectively. Regarding the response when one's child misbehaves, the burnout risk for nurses who had experienced spanking their child was 6.53 times higher (95% confidence interval: 2.13–20.01) than for those who used another way to teach the child that the behavior was wrong.

Regarding overtime work, the burnout risk for nurses who had "4–6 h/week" overtime work was 4.11 times higher (95% confidence interval: 1.88–8.99) than for those who did not.

DISCUSSION

This is a prospective cohort study that aims to clarify the factors affecting burnout in female nurses who have preschool-age children and are employed at city hospitals with 200 or more beds throughout Japan. Here, the authors shall discuss influencing or predictive factors in burnout as elucidated from the results of this study, categorized as personal factors, environmental factors, and coping behavior.

Personal factors

Attributes. The results of multiple logistic regression analysis showed that the risk of burnout occurring in nurses with 3 years or more experience at their present workplace was 0.46 times that of nurses with less than 3 years of experience. The relationship between years of work experience and burnout in nurses has been clarified in several studies in Japan (Shimizu, Feng, &

Nagata, 2005; Suzumura *et al*., 2007). However, because nurses who are mothers of preschool children have periods during which they are not actively working as nurses due to marriage or childbirth, the present study did not consider total years of experience, but rather years of experience at the present workplace, as a factor in burnout. An overseas study by Oyeleye, Hanson, O'Connor, and Dunn (2013) shows similar results, clearly indicating a relationship between burnout and fewer years in a workplace, and reporting that the accumulation of years in a workplace is essential to the building of human relationships in the workplace. Tourangeau, Cranley, Spence Laschinger, and Pachis (2010) also state that burnout is a work-derived type of stress that originates with poor human relationships or a feeling of bearing an excessive burden in relations with others. These findings suggest that continued employment in the same workplace is important to the cultivation of workplace relationships and can thus prevent burnout. A study by Maeno *et al*. (2006), however, clearly shows that stress due to work reassignments is high among nurses who have children and do not request to be assigned to different workplaces.

These findings suggest that, insofar as the probability of having already cultivated relationships with nursing staff is higher in a familiar environment, one strategy for preventing burnout is to enable nurses to return to their pre-leave workplace after taking maternity or child-care leave. This calls for administrators to adopt personnel measures that guarantee the posts of nurses while on maternity or child-care leave so that they may return to the same workplace afterward.

Items related to self or children. Regarding "will to continue work", the present authors' analysis indicated that nurses who want to quit are far more likely, by a factor of 7.5, to experience burnout than those who want to continue working. Zhang *et al*. (2014) report that nurses showing a high "burnout" score displayed low degrees of satisfaction in their work and of the will to continue nursing work. Furthermore, Happell *et al*. (2012) and Meeusen, Van Dam, Brown-Mahoney, Van Zundert, and Knape (2011) report that dissatisfaction with work is the highest predictor they found for burnout or leaving one's job. Insofar as the present study yielded results similar to those of other studies of nurses in general, it suggests that among female nurses with preschool-age children, as with other groups, those who lack the will to continue work are more likely to experience burnout. Cañadas-De la Fuente *et al*. (2015) also state that women tend to suffer burnout more than men, and that a frequent factor is the experience of conflict between their job and household work. This report suggests that for women in the general employment population, conflicts arising between their job and their role in the household are a factor in burnout, as one form of work-related stress. The present authors may surmise that for nurses, with their irregular working hours and excessive burden of job-related duties, the conflict between job and household roles must be even greater. Thus, the present authors consider it essential that further research be conducted on the relationship between job dissatisfaction and role conflicts.

Child-rearing behavior and support. In regard to child-rearing behavior and support, results in the category of refraining from restrictions or punishment showed that those who "spank" their child are 6.53 times more likely to experience burnout than those who "find some way to let the child know the behavior is wrong". It has already been reported that "years at the present workplace" (Queiros, Carlotto, Kaiseler, Dias, & Pereira, 2013), "will to continue work" (Forbes, Freeman, McCombes, & Humphris, 2014; Tourangeau *et al*., 2010), "assertiveness" (Suzuki *et al*., 2009, 2010), and "overtime work" (Stimpfel, Sloane, & Aiken, 2012), as addressed in the present study, are related or influencing factors in burnout among groups other than mothers of preschool-age children. However, the results associated with child-rearing behavior and support is a unique aspect of the present study and may be considered a new finding. The present authors believe it is important to further clarify characteristics associated with those subjects who indicated that they respond to their child's misbehavior with spanking.

Assertiveness. Results in regard to assertiveness showed that the burnout risk for nurses who were "somewhat low" and "somewhat high" in assertiveness was 0.47 and 0.34 times the risk for those who were "very low" in assertiveness, respectively. These are similar to the results obtained by Suzuki *et al*. (2009), who surveyed nurse managers, and Suzuki *et al*. (2010), who surveyed recently graduated nurses. The latter survey by Suzuki *et al*. found that recent graduates were prone to burnout if either very high or very low in assertiveness, suggesting that a middle ground was desirable. The present study makes clear that for female nurses with preschool-age children as well, those in the middle ground of assertiveness were less likely to experience burnout.

The authors may hypothesize that those with very low assertiveness find it difficult to make requests regarding their children to superiors due to feelings of reticence toward other staff, while those with very high

assertiveness may find their relationship with other staff suffering due to excessive insistence on their own prerogatives.

Recently, assertiveness or assertion training has received attention and been applied to many subjects, not only nurses. There have been reports of recovery from burnout (Shimizu, Mizoue, Kubota, Mishima, & Nagata, 2003) or stress (Yamagishi *et al*., 2007) through communication skill or assertiveness training. McVanel and Morris (2010) and Deltsidou (2009) further state that learning to be assertive improves work efficacy. This suggests that the application of assertiveness training to nurses with preschool-age children may also be effective in preventing burnout.

Commitment/mental health. Commitment and mental health were not found to be influencing factors in burnout among female nurses with preschool-age children. However, bivariate analysis indicated a significant relationship between burnout and both commitment ($P < 0.01$) and mental health ($P < 0.01$). Hence, the authors view it as important to continue surveys pertinent to these issues.

Environmental factors

Working environment. In regard to the working environment, the authors found that subjects working 4–6 h of overtime per week were 4.11 times more likely to experience burnout than those without overtime. Bivariate analysis indicated that the percentage of burnout occurrences rose significantly as the number of overtime hours increased. This conforms to the findings of Imai, Nakao, Tsuchiya, Kuroda, and Katoh (2004) and Viviers, Lachance, Maranda, and Menard (2008). However, a noteworthy result of the present study was that only 4–6 h overtime emerged as an influencing factor, with a higher burnout risk than for those working more than 6 h overtime per week. The present authors may surmise that those working more than 6 h overtime would find it problematic to continue their job without having a source of child-rearing support. On the other hand, 4–6 h weekly overtime roughly averages to approximately 1 h of overtime per day, an amount that can be handled without relying on another source of child-rearing support, but for this reason may produce physical and mental exhaustion due to the associated accumulation of time-related and emotional pressure. Because child-rearing occurs for a certain period, these findings suggest the desirability of implementing job and personnel assignment measures allowing, as much as possible, for nurses with preschool-age children to return home at the same time each day.

In terms of legal provisions, Japan has a Child Care and Family Care Leave Law, but it can be inferred that the existing provisions are not necessarily adequate as support for workers with preschool-age children. Amid these circumstances, efforts have begun to promote the introduction of a variety of working patterns that improve the work–life balance for nurses. If nurses can choose the working pattern best suited to their lifestyle, it will reduce the stress associated with attempting to balance work and child-rearing; consequently, it is hoped that healthcare facilities will increasingly adopt a diversity of working patterns, not only those associated with child-rearing time.

Coping behavior

Coping behavior was not seen as an influencing factor in burnout among nurses who are mothers of preschool-age children. However, bivariate analysis indicated a relationship between burnout and the presence or absence of a boss as consultant on work issues ($0.01 < P < 0.05$), as well as between burnout and coping mechanisms ($P < 0.01$). These findings suggest the value of further study of coping behavior in this context.

CONCLUSION

The present study is a prospective cohort study that aims to clarify the factors affecting burnout among female nurses with preschool-age children. The nurses were employed at city hospitals with more than 200 beds across Japan. Multiple logistic regression analysis yielded the following results:

1 Among personal factors, years of experience at the present workplace, will to continue working, response to child misbehavior, and assertiveness were determined to be influencing or predictive factors in burnout among female nurses with preschool-age children.
2 Among environmental factors, overtime work was determined to be an influencing factor in burnout among female nurses with preschool-age children.
3 Coping behavior was not determined to be an influencing factor in burnout among female nurses with preschool-age children.

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CONFLICT OF INTEREST

The authors have no conflicts of interest.

AUTHOR CONTRIBUTION

Study design was performed by A.M. and E.S., data collection and analysis by A.M., and manuscript writing by A.M., E.S. and Y.T.

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