Original Article

Factors Associated with Turnover Intention among Nurses in Small and Medium-Sized Medical Institutions

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Abstract

Objectives: The objective of this study was to evaluate factors associated with turnover intention among nurses in small and medium-sized medical institutions.

Methods: A self-administered questionnaire survey was performed in 293 registered nurses, licensed practical nurses, and assistant nurses working full-time in various medical institutions. Multiple linear regression analysis was conducted, with turnover intention as the dependent variable, and nurses' basic attributes and job satisfaction as independent variables.

Results: As for nurses' basic attributes, turnover intention was significantly associated with registered nurses, younger nurses and those with low satisfaction with sleep. As for nurses' job satisfaction, the number of nurses with turnover intention was significantly higher for those with low satisfaction with salary, low satisfaction with welfare, poor implementation of fair salary raise and poor cooperation among nurses.

Conclusion: Turnover intention may be reduced by the enhancement of trust in the organization, giving appropriate advice to young nurses and registered nurses, and developing measures for addressing sleep disorders.

Key words: nurse, turnover, job satisfaction, questionnaire, medical institution

Introduction

A high turnover rate among nurses may have unfavorable influences on the nursing system and on the improvement of the quality of nurses trained by extensive clinical experience. Therefore, studies on factors affecting nurses' turnover intention are important for maintaining the quality of nurses.

There have been many studies abroad on the association between nurses' turnover and job satisfaction (1–5). In Japan, there have been some studies that assessed job satisfaction among nurses (6–10); however, there are few studies that statistically evaluated the association between job satisfaction and turnover (11).

To obtain clues for decreasing the turnover rate among nurses, we evaluated the association between turnover intention and nurses' basic attributes as well as job satisfaction.

Materials and Methods

1. Subjects and distribution/recovery of questionnaire

In July 2005, anonymous self-administered questionnaires were distributed to 293 registered nurses, licensed practical nurses, and assistant nurses working full time in four small and medium-sized medical institutions. Each medical institution was composed of several groups of internal medicine and surgery sections. For these small and medium-sized medical institutions, a sampling method through personal connections was conducted (Table 1).

The nurse director of each medical institution distributed the questionnaires, corresponding envelopes for questionnaire return and documents, which took informed consent and explained the purpose of this study and the privacy policy.

An accomplished questionnaire was placed into the envelope provided and the envelop was sealed and placed in a questionnaire collection box in the nurse station, or was mailed depending on the preference of each nurse. We paid

Table 1   Characteristics of participating hospitals

	Location	Type of hospital	Number of beds	Number of nurses			
				Registered nurses	Licensed practical nurses	Assistant nurses	Total
A hospital	Kanagawa	Private	59	5 (20.8%)	7 (29.2%)	12 (50.0%)	24 (100%)
B hospital	Shizuoka	Private	92	17 (30.9%)	14 (25.5%)	24 (43.6%)	55 (100%)
C hospital	Kanagawa	Private	130	22 (33.3%)	15 (22.7%)	29 (43.9%)	66 (100%)
D hospital	Kanagawa	Private	161	104 (70.3%)	20 (13.5%)	24 (16.2%)	148 (100%)

Table 2   Distribution of analysis subjects

Age	A hospital		B hospital		C hospital		D hospital	
	Men	Women	Men	Women	Men	Women	Men	Women
–29	2 (40.0%)	4 (26.7%)	0	3 (15.0%)	2 (33.3%)	20 (40.0%)	2 (50.0%)	29 (42.6%)
30–39	2 (40.0%)	3 (20.0%)	0	6 (30.0%)	4 (66.7%)	12 (24.0%)	2 (50.0%)	22 (32.4%)
40–49	0 (0%)	2 (13.3%)	0	8 (40.0%)	0 (0%)	9 (18.0%)	0 (0%)	6 (8.8%)
50–	1 (20.0%)	6 (40.0%)	0	3 (15.0%)	0 (0%)	9 (18.0%)	0 (0%)	11 (16.2%)
Total	5 (100%)	15 (100%)	0	20 (100%)	6 (100%)	50 (100%)	4 (100%)	68 (100%)

the mailing cost.

Of the 293 questionnaires distributed, 208 (71.0%) were received. After excluding the questionnaires with missing values, 168 questionnaires were analyzed (effective response rate, 57.3%). The subjects consisted of 15 males and 153 females with a mean age of 35.8 years (range, 18–67 years) (Table 2).

2. Question items
Turnover intention

Concerning turnover intention, for the question, "What degree of intention to resign from this hospital do you have?", the subjects answered by selecting among five answers from "considerable" to "negligible".

Variables related to basic attributes of subjects

The factors related to the basic attributes are as follows: sex, age, job rank (i.e., registered nurse, licensed practical nurse, and assistant nurse), affiliation (i.e., outpatient clinic, ward, operating room, and CCU/ICU), differences among medical institutions, marital status (i.e., married, unmarried, and bereaved/divorced), with/without children, sleeping hours (i.e., <6 hours, 6–8 hours, and >8 hours), and the degree of satisfaction with sleep (i.e., three grades from satisfied to unsatisfied).

Variables related to job satisfaction

We prepared 14 original questions related to job satisfaction using questions from previous studies in Japan and abroad as references (1–16) (Appendix).

The core questions were about factors related to treatment by the respective medical organization (i.e., salary, welfare, fair salary raise, and principles and ideas of the hospital), factors related to comfort (i.e., free time and adequate rest), factors related to communication (i.e., physicians' instructions to nurses, open communication with physicians, and cooperation among nurses), and factors related to the specialization of nursing (i.e., pride from the occupation, work requiring expert knowledge and techniques, work with responsibility, work allowing display of abilities, and opportunities for skill improvement). For the questions in these 14 items, the subjects selected among five answers from "definitely agree" to "definitely disagree".

3. Statistical analysis

To evaluate the association between turnover intention and the basic attributes of the subjects, Mann-Whitney U test or Kruskal-Wallis test was performed.

To evaluate the association between turnover intention and job satisfaction, Kruskal-Wallis test was performed.

To investigate the factors associated with turnover intention among nurses, standard partial regression coefficient was computed by multiple linear regression analysis using stepwise methods, with turnover intention as the dependent variable, and nurses' basic attributes and job satisfaction as independent variables. The selective criterion for the variables was a p value less than 0.05. Sex and age were always included in the final model as independent variables because they might be confounding factors.

At the same time, we obtained Pearson correlation coefficient to clarify what degree of correlation exists between turnover intention and each variable.

In the above analysis, concerning turnover intention, the following points were given: 5 points for "considerable", 4 points for "some", 3 points for "intermediate", 2 points for "slight", and 1 point for "negligible".

Concerning job satisfaction question items consisting of 14 scales, the following points were given: 5 points for "definitely agree", 4 points for "somewhat agree", 3 points for "intermediate", 2 points for "somewhat disagree", and 1 point for "definitely disagree".

One point was given for males and 0 point for females. As for age, chronological age was used. Regarding job ranks, assistant nurses were used as the standard, and dummy variables representing registered nurses and licensed practical nurses were produced. Concerning affiliation, because none of

the subjects was affiliated with the CCU/ICU, the operating room was used as the standard, and dummy variables representing the outpatient clinic and ward were produced. Concerning differences among medical institutions, D hospital was used as the standard, and dummy variables representing A hospital, B hospital, and C hospital were produced.

For the marital status, bereaved/divorced was used as the standard, and dummy variables representing married and unmarried were produced. Regarding with/without children, 1 point was given to subjects with children and 0 point to those without children. For sleeping hours, because no patients slept for >8 hours, 1 point was given for 6–8 hours and 0 point for <6 hours. Regarding the degree of satisfaction with sleep, the following points were given: 3 points for "satisfied",

2 points for "intermediate", and 1 point for "unsatisfied".

For all analyses, SPSS 11.5 J for Windows was used.

Results

The association between turnover intention and the basic attributes of the subjects is shown in Table 3. Turnover intention was significantly associated with age, job rank, affiliation, with/without children and the degree of satisfaction with sleep.

The association between turnover intention and job satisfaction is shown in Table 4. Among the factors related to treatment by the respective medical organization, turnover intention was significantly associated with salary, welfare, fair salary raise and the principles and ideas of the hospital.

Table 3   Relationships between turnover intention and basic attributes of subjects

	Turnover intention					Total	p value
	Negligible (n=9)	Slight (=23)	Intermediate (n=27)	Some (n=62)	Considerable (n=47)		
Sex							
Man	0 (0%)	0 (0%)	4 (26.7%)	9 (60.0%)	2 (13.3%)	15 (100%)	
Woman	9 (5.9%)	23 (15.0%)	23 (15.0%)	53 (34.6%)	45 (29.4%)	153 (100%)	0.903
Age							
–34	2 (2.1%)	7 (7.2%)	16 (16.5%)	43 (44.3%)	29 (29.9%)	97 (100%)	
35–	7 (9.9%)	16 (22.5%)	11 (15.5%)	19 (26.8%)	18 (25.4%)	71 (100%)	0.008*
Job rank							
Registered nurse	3 (3.3%)	7 (7.8%)	14 (15.6%)	33 (36.7%)	33 (36.7%)	90 (100%)	
Licensed practical nurse	2 (6.5%)	7 (22.6%)	5 (16.1%)	9 (29.0%)	8 (25.8%)	31 (100%)	
Assistant nurse	4 (8.5%)	9 (19.1%)	8 (17.0%)	20 (42.6%)	6 (12.8%)	47 (100%)	0.005**
Affiliation							
Outpatient clinic	3 (15.8%)	6 (31.6%)	3 (15.8%)	5 (26.3%)	2 (10.5%)	19 (100%)	
Ward	5 (3.6%)	16 (11.5%)	24 (17.3%)	51 (36.7%)	43 (30.9%)	139 (100%)	
Operating room	1 (10.0%)	1 (10.0%)	0 (0%)	6 (60.0%)	2 (20.0%)	10 (100%)	0.009**
CCU/ICU	0	0	0	0	0	0	
Difference among medical institution							
A hospital	0 (0%)	2 (10.0%)	3 (15.0%)	11 (55.0%)	4 (20.0%)	20 (100%)	
B hospital	2 (10.0%)	5 (25.0%)	5 (25.0%)	4 (20.0%)	4 (20.0%)	20 (100%)	
C hospital	4 (7.1%)	7 (12.5%)	9 (16.1%)	19 (33.9%)	17 (30.4%)	56 (100%)	
D hospital	3 (4.2%)	9 (12.5%)	10 (13.9%)	28 (38.9%)	22 (30.6%)	72 (100%)	0.219
Marital status							
Married	7 (8.8%)	15 (18.8%)	14 (17.5%)	24 (30.0%)	20 (25.0%)	80 (100%)	
Unmarried	2 (3.0%)	5 (7.6%)	11 (16.7%)	27 (40.9%)	21 (31.8%)	66 (100%)	
Bereaved/divorced	0 (0%)	3 (13.6%)	2 (9.1%)	11 (50.0%)	6 (27.3%)	22 (100%)	0.071
With/without children							
With children	7 (8.4%)	17 (20.5%)	14 (16.9%)	24 (28.9%)	21 (25.3%)	83 (100%)	
Without children	2 (2.4%)	6 (7.1%)	13 (15.3%)	38 (44.7%)	26 (30.6%)	85 (100%)	0.012*
Sleeping hours							
<6 h	1 (1.8%)	5 (9.1%)	8 (14.5%)	25 (45.5%)	16 (29.1%)	55 (100%)	
6–8 h	8 (7.1%)	18 (15.9%)	19 (16.8%)	37 (32.7%)	31 (27.4%)	113 (100%)	0.146
>8 h	0	0	0	0	0	0	
Degree of satisfaction with sleep							
Satisfied	4 (13.8%)	12 (41.4%)	4 (13.8%)	5 (17.2%)	4 (13.8%)	29 (100%)	
Intermediate	3 (3.8%)	8 (10.1%)	18 (22.8%)	36 (45.6%)	14 (17.7%)	79 (100%)	
Unsatisfied	2 (3.3%)	3 (5.0%)	5 (8.3%)	21 (35.0%)	29 (48.3%)	60 (100%)	p<0.001**

Mann-Whitney U test was performed for sex, age (binary categorization using mean age, 35 years, as standard), with/without children, and sleeping hours.

Kruskal-Wallis test was performed for job rank, affiliation, difference among medical institution, marital status, and degree of satisfaction with sleep.

* p<0.05, ** p<0.01.

Table 4 Relationships between turnover intention and job satisfaction

	Turnover intention					Total	p value
	Negligible (n=9)	Slight (=23)	Intermediate (n=27)	Some (n=62)	Considerable (n=47)		
Salary							
Definitely agree	0 (0%)	2 (50.0%)	1 (25.0%)	1 (25.0%)	0 (0%)	4 (100%)	
Somewhat agree	4 (15.4%)	4 (15.4%)	5 (19.2%)	7 (26.9%)	6 (23.1%)	26 (100%)	
Intermediate	2 (4.4%)	5 (11.1%)	12 (26.7%)	19 (42.2%)	7 (15.6%)	45 (101%)	
Somewhat disagree	3 (5.5%)	10 (18.2%)	8 (14.5%)	23 (41.8%)	11 (20.0%)	55 (100%)	
Definitely disagree	0 (0%)	2 (5.3%)	1 (2.6%)	13 (31.6%)	23 (60.5%)	38 (100%)	$p<0.001$**
Welfare							
Definitely agree	1 (50.0%)	1 (50.0%)	0 (0%)	0 (0%)	0 (0%)	2 (100%)	
Somewhat agree	2 (7.4%)	8 (29.6%)	6 (22.2%)	8 (29.6%)	3 (11.1%)	27 (100%)	
Intermediate	4 (6.7%)	5 (8.3%)	9 (15.0%)	29 (48.3%)	13 (21.7%)	60 (100%)	
Somewhat disagree	0 (0%)	9 (20.5%)	6 (13.6%)	15 (34.1%)	14 (31.8%)	44 (100%)	
Definitely disagree	2 (5.7%)	0 (0%)	6 (17.1%)	10 (28.6%)	17 (48.6%)	35 (100%)	0.001**
Fair salary raise							
Definitely agree	0 (0%)	1 (100%)	0 (0%)	0 (0%)	0 (0%)	1 (100%)	
Somewhat agree	3 (21.4%)	5 (35.7%)	1 (7.1%)	4 (28.6%)	1 (7.1%)	14 (100%)	
Intermediate	4 (5.6%)	11 (15.5%)	16 (22.5%)	27 (38.0%)	13 (18.3%)	71 (100%)	
Somewhat disagree	2 (3.8%)	4 (7.5%)	8 (15.1%)	20 (37.7%)	19 (35.8%)	53 (100%)	
Definitely disagree	0 (0%)	2 (6.9%)	2 (6.9%)	11 (37.9%)	14 (48.3%)	29 (100%)	$p<0.001$**
Principles and ideas of hospital							
Definitely agree	1 (12.5%)	2 (25.0%)	2 (25.0%)	3 (37.5%)	0 (0%)	8 (100%)	
Somewhat agree	4 (7.7%)	13 (25.0%)	7 (13.5%)	14 (26.9%)	14 (26.9%)	52 (100%)	
Intermediate	3 (3.8%)	6 (7.7%)	15 (19.2%)	34 (43.6%)	20 (25.6%)	78 (100%)	
Somewhat disagree	1 (5.3%)	2 (10.5%)	3 (15.8%)	7 (36.8%)	6 (31.6%)	19 (100%)	
Definitely disagree	0 (0%)	0 (0%)	0 (0%)	4 (36.4%)	7 (63.6%)	11 (100%)	0.005**
Free time							
Definitely agree	1 (12.5%)	3 (37.5%)	0 (0%)	4 (50.0%)	0 (0%)	8 (100%)	
Somewhat agree	4 (7.5%)	11 (20.8%)	10 (18.9%)	17 (32.1%)	11 (20.8%)	53 (100%)	
Intermediate	1 (2.4%)	4 (9.5%)	8 (19.0%)	17 (40.5%)	12 (28.6%)	42 (100%)	
Somewhat disagree	3 (7.3%)	3 (7.3%)	6 (14.6%)	15 (36.6%)	14 (34.1%)	41 (100%)	
Definitely disagree	0 (0%)	2 (8.3%)	3 (12.5%)	9 (37.5%)	10 (41.7%)	24 (100%)	0.021*
Adequate rest							
Definitely agree	0 (0%)	2 (40.0%)	0 (0%)	3 (60.0%)	0 (0%)	5 (100%)	
Somewhat agree	5 (17.2%)	6 (20.7%)	7 (24.1%)	7 (24.1%)	4 (13.8%)	29 (100%)	
Intermediate	1 (2.2%)	7 (15.2%)	7 (15.2%)	22 (47.8%)	9 (19.6%)	46 (100%)	
Somewhat disagree	3 (5.2%)	8 (13.8%)	9 (15.5%)	19 (32.8%)	19 (32.8%)	58 (100%)	
Definitely disagree	0 (0%)	0 (0%)	4 (13.3%)	11 (36.7%)	15 (50.0%)	30 (100%)	$p<0.001$**
Physicians' instructions to nurses							
Definitely agree	0 (0%)	1 (50.0%)	0 (0%)	1 (50.0%)	0 (0%)	2 (100%)	
Somewhat agree	4 (21.1%)	3 (15.8%)	5 (26.3%)	5 (26.3%)	2 (10.5%)	19 (100%)	
Intermediate	3 (4.0%)	10 (13.3%)	12 (16.0%)	29 (38.7%)	21 (28.0%)	75 (100%)	
Somewhat disagree	2 (3.6%)	9 (16.1%)	9 (16.1%)	21 (37.5%)	15 (26.8%)	56 (100%)	
Definitely disagree	0 (0%)	0 (0%)	1 (6.3%)	6 (37.5%)	9 (56.3%)	16 (100%)	0.002**

Table 4 (continued)

	Turnover intention					Total	p value
	Negligible (n=9)	Slight (=23)	Intermediate (n=27)	Some (n=62)	Considerable (n=47)		
Open communication with physicians							
Definitely agree	0 (0%)	2 (40.0%)	0 (0%)	1 (20.0%)	2 (40.0%)	5 (100%)	
Somewhat agree	4 (11.4%)	7 (20.0%)	8 (22.9%)	13 (37.1%)	3 (8.6%)	35 (100%)	
Intermediate	4 (6.3%)	7 (11.1%)	12 (19.0%)	22 (34.9%)	18 (28.6%)	63 (100%)	
Somewhat disagree	0 (0%)	7 (15.9%)	2 (4.5%)	17 (38.6%)	18 (40.9%)	44 (100%)	
Definitely disagree	1 (4.8%)	0 (0%)	5 (23.8%)	9 (42.9%)	6 (28.6%)	21 (100%)	0.008**
Cooperation among nurses							
Definitely agree	0 (0%)	0 (0%)	0 (0%)	1 (20.0%)	4 (80.0%)	5 (100%)	
Somewhat agree	9 (15.3%)	17 (28.8%)	11 (18.6%)	16 (27.1%)	6 (10.2%)	59 (100%)	
Intermediate	0 (0%)	5 (7.6%)	11 (16.7%)	32 (48.5%)	18 (27.3%)	66 (100%)	
Somewhat disagree	0 (0%)	1 (3.7%)	4 (14.8%)	11 (40.7%)	11 (40.7%)	27 (100%)	
Definitely disagree	0 (0%)	0 (0%)	1 (9.1%)	2 (18.2%)	8 (72.7%)	11 (100%)	p<0.001**
Pride from occupation							
Definitely agree	4 (8.5%)	11 (23.4%)	9 (19.1%)	8 (17.0%)	15 (31.9%)	47 (100%)	
Somewhat agree	4 (7.1%)	9 (16.1%)	7 (12.5%)	24 (42.9%)	12 (21.4%)	56 (100%)	
Intermediate	1 (2.3%)	2 (4.5%)	8 (18.2%)	22 (50.0%)	11 (25.0%)	44 (100%)	
Somewhat disagree	0 (0%)	1 (5.0%)	3 (15.0%)	8 (40.0%)	8 (40.0%)	20 (100%)	
Definitely disagree	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (100%)	1 (100%)	0.104
Work requiring expert knowledge and techniques							
Definitely agree	5 (5.0%)	17 (17.0%)	16 (16.0%)	32 (32.0%)	30 (30.0%)	100 (100%)	
Somewhat agree	3 (7.9%)	2 (5.3%)	5 (13.2%)	16 (42.1%)	12 (31.6%)	38 (100%)	
Intermediate	0 (0%)	1 (5.9%)	4 (23.5%)	9 (52.9%)	3 (17.6%)	17 (100%)	
Somewhat disagree	1 (8.3%)	3 (25.0%)	2 (16.7%)	4 (33.3%)	2 (16.7%)	12 (100%)	
Definitely disagree	0 (0%)	0 (0%)	0 (0%)	1 (100%)	0 (0%)	1 (100%)	0.652
Work that carries important responsibility							
Definitely agree	5 (6.1%)	13 (15.9%)	13 (15.9%)	27 (32.9%)	24 (29.3%)	82 (100%)	
Somewhat agree	4 (7.7%)	8 (15.4%)	10 (19.2%)	19 (36.5%)	11 (21.2%)	52 (100%)	
Intermediate	0 (0%)	1 (3.8%)	3 (11.5%)	13 (50.0%)	9 (34.6%)	26 (100%)	
Somewhat disagree	0 (0%)	1 (12.5%)	1 (12.5%)	3 (37.5%)	3 (37.5%)	8 (100%)	
Definitely disagree	0	0	0	0	0	0	0.126
Work allowing display of abilities							
Definitely agree	3 (13.0%)	7 (30.4%)	3 (13.0%)	6 (26.1%)	4 (17.4%)	23 (100%)	
Somewhat agree	1 (2.1%)	12 (25.5%)	5 (10.6%)	19 (40.4%)	10 (21.3%)	47 (100%)	
Intermediate	5 (6.6%)	3 (3.9%)	15 (19.7%)	28 (36.8%)	25 (32.9%)	76 (100%)	
Somewhat disagree	0 (0%)	1 (5.6%)	2 (11.1%)	8 (44.4%)	7 (38.9%)	18 (100%)	
Definitely disagree	0 (0%)	0 (0%)	2 (50.0%)	1 (25.0%)	1 (25.0%)	4 (100%)	0.029*
Opportunities for skill improvement							
Definitely agree	1 (4.0%)	7 (28.0%)	5 (20.0%)	6 (24.0%)	6 (24.0%)	25 (100%)	
Somewhat agree	5 (9.6%)	9 (17.3%)	8 (15.4%)	17 (32.7%)	13 (25.0%)	52 (100%)	
Intermediate	2 (3.2%)	5 (8.1%)	9 (14.5%)	25 (40.3%)	21 (33.9%)	62 (100%)	
Somewhat disagree	1 (4.3%)	2 (9.1%)	3 (13.6%)	11 (50.0%)	5 (22.7%)	22 (100%)	
Definitely disagree	0 (0%)	0 (0%)	2 (28.6%)	3 (42.9%)	2 (28.6%)	7 (100%)	0.190

* p<0.05, ** p<0.01.

Table 5 Factors associated with turnover intention

	Pearson correlation coefficient	Standard partial regression coefficient
Sex	0.049	0.008
Age	−0.301**	−0.240**
Registered nurse	0.249**	0.173**
Licensed practical nurse	−0.095	
Outpatient clinic	−0.257**	
Ward	0.213**	
Operating room	0.003	
A hospital	0.052	
B hospital	−0.168*	
C hospital	−0.004	
Married	−0.201**	
Unmarried	0.154*	
With children	−0.222**	
Sleeping hours	−0.134	
Degree of satisfaction with sleep	−0.417**	−0.272**
Salary	−0.330**	−0.149*
Welfare	−0.302**	−0.144*
Fair salary raise	−0.377**	−0.152*
Principles and ideas of hospital	−0.279**	
Free time	−0.250**	
Adequate rest	−0.334**	
Physicians' instructions to nurses	−0.383**	
Open communication with physicians	−0.260**	
Cooperation among nurses	−0.230**	−0.255**
Pride from occupation	−0.230**	
Work requiring expert knowledge and techniques	0.019	
Work that carries important responsibility	−0.123	
Work allowing display of abilities	−0.250**	
Opportunities for skill improvement	−0.170*	
Adjusted R square		0.451

* p<0.05, ** p<0.01.

Among the factors related to comfort, turnover intention was significantly associated with free time and adequate rest. Among the factors related to communication, turnover intention was significantly associated with physicians' instructions to nurses, open communication with physicians, and cooperation among nurses. Among the factors related to the specialization of nursing, turnover intention was significantly associated with work allowing the display of abilities.

The standard partial regression coefficient and Pearson correlation coefficient are shown in Table 5. As a result of the multiple regression analysis, as for nurses' basic attributes, turnover intention was significantly associated with younger nurses, registered nurses and those with low satisfaction with sleep. As for nurses' job satisfaction, the number of nurses with turnover intention was significantly higher for those with low satisfaction with salary, low satisfaction with welfare, poor implementation of fair salary raise and poor cooperation among nurses.

Discussion

Ozaki (14) evaluated job satisfaction among nurses in the U.S. using a job satisfaction questionnaire developed by Stamp et al. (15). Since then, many studies have evaluated job satisfaction among nurses in Japan (6–9) using the job satisfaction questionnaire of Stamp et al. (15). However, the purpose of these studies (6–9) was not the evaluation of factors affecting job turnover.

In addition, the job satisfaction questionnaire developed by Stamp et al. (15) consists of 48 items, which may be difficult for subjects to answer. Therefore, we developed a new job satisfaction questionnaire consisting of only 14 items to reduce the burden of nurses from answering the questions on the basis of previous studies in Japan and abroad (1–16).

Salary, welfare, and fair salary raise as factors related to treatment by the respective medical organization were significantly associated with turnover intention. These factors are associated with the security and stability of subjects' life. The medical organization's attitude to provide security and stability of life to nurses may be an important factor for reducing turnover. These results are consistent with those of previous studies (1).

Poor cooperation among nurses was a factor promoting turnover. In various clinical settings, nurses experience many setbacks and difficulties, and the presence of colleagues who support one another in times of hardship and challenges may be very important. These results are also consistent with those of previous studies (4).

Herzberg et al. (18) pointed out the necessity of dividing the factors associated with workers' job satisfaction and those associated with dissatisfaction before discussing them because these factors differ from each other. Intrinsic factors that they named 'motivators' were associated with job satisfaction and included the following: achievements, recognition, work itself, and responsibility. On the other hand, extrinsic factors which they named 'hygiene' were associated with job dissatisfaction and included the following: company policy, administration, supervision, salary, working conditions and relationships with others.

Furthermore, according to the Japanese Nursing Association, a questionnaire survey showed that the main reason for resignation was "job dissatisfaction" (19). Assuming that the degree of job dissatisfaction is related to turnover intention, turnover intention was significantly associated with the hygiene factors. This result is consistent with the reports by Herzberg et al. (18) and the Japanese Nursing Association (19).

However, previous studies in other countries have shown that motivational factors—autonomy and professional growth opportunities—in addition to these hygiene factors are important factors affecting turnover (1, 4). It seems that there are differences between Japanese nurses and nurses from other countries in terms of career development and medical culture, which are unique to each country. Such differences might be manifested as the difference in the factors that spur the turnover intention of nurses between Japan and other countries.

There are few studies wherein the factors associated with turnover intention of nurses in Japan are discussed. At this

time, it is necessary to further discuss whether hygiene factors alone are associated with the turnover intention of nurses in Japan.

The degree of satisfaction with sleep was significantly associated with turnover intention. Inadequate sleep may cause physical and psychological pain. Shimizu et al. (17) evaluated the association between turnover intention among nurses and factors related to lifestyle, labor environments, and health condition. They reported sleep disorder as a factor promoting turnover among young nurses, which was consistent with our results.

With advancing age, the number of nurses with turnover intention significantly decreased. Nurses should master new medical techniques and deal with various patients. Older nurses appear to have mastered various medical techniques, and acquired abilities and strength to deal with difficult situations in various clinical settings. Careful instruction to young nurses may be important.

Turnover intention was significantly associated with registered nurses. Registered nurses give instructions to licensed practical nurses and assistant nurses, and therefore have a greater responsibility burden. In consideration of this responsibility burden of registered nurses, careful follow up by superiors may be necessary.

The limitation of this study is that from the 293 questionnaires distributed, only 208 (71.0%) were received. Also, after excluding the questionnaires with missing values, only 168 questionnaires were analyzed (effective response rate, 57.3%). Thus, the turnover intention of 125 subjects could not be analyzed.

The four cooperating medical institutions were sampled through personal connections, limiting the study subjects. This is the second limitation of this study. In future studies, it is necessary to further collect data regarding the factors associated with turnover intention in nurses, including those at large hospitals.

This current survey targeted only one simple item regarding turnover intention. In the future, it is important to survey turnover intention targeting more than one item. In addition, it is necessary to conduct analysis according to the job types of registered nurses.

The Adjusted R square value was 0.451. Therefore, it is considered that there are factors associated with the turnover intention of nurses other than the question items prepared by the authors. It is necessary to further discuss the contents of the question items in future studies.

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Appendix

Question items related to job satisfaction

Factors related to treatment by the respective medical organization

    1. I am satisfied with my present salary.

    2. There is a good welfare system in this hospital.

    3. Fair salary raises according to ability are implemented in this hospital.

    4. The principles and ideas of this hospital are good.

Factors related to comfort

    5. I can have sufficient time such as leisure that I can spend freely.

    6. I can take adequate rest to relieve my fatigue.

Factors related to communication

    7. Physicians in this hospital generally give appropriate instructions to nurses.

    8. I can have open communication with physicians about medical problems.

    9. There are adequate teamwork and cooperation among nurses.

Factors related to specialization of nursing

    10. I always think that my work is very important.

    11. My work requires expert knowledge and techniques.

    12. I think that I have work that carries important responsibility.

    13. This work allows the display of my abilities.

    14. There are many opportunities such as training for nurses' skill improvement in this hospital.