Investigation of the Influence of Mentors in the Workplace Environment of Nurses, including Associated Occupational Stress and Willingness to Continue Working

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Abstract

This study was performed to examine the conditions surrounding the existence of mentors on Japanese nurses, and to examine how the existence of mentors affects the workplace environment and associated occupational stress as well as the influence on willingness of nurses to continue working. Data were collected in a cross-sectional manner using a questionnaire distributed to a total of 1,517 nurses working in seven hospitals in Japan. The number of valid survey responses was 1,275（average valid response rate = 95.0%）. The Japanese Mentoring Functions Questionnaire with nine items, the Japanese Areas of Worklife Survey（AWS）, and the Japanese Maslach Burnout Inventory-General Survey （MBI-GS）were used in this study to examine mentoring, the workplace environment, and occupational stress, respectively. We created an original scale to measure willingness to continue working. Approximately 60% of the nurses had mentors. Notably, more nurses in their 20s and 30s had mentors than those in their 40s or older. Nurses that had mentors showed significantly greater willingness to continue working. On the AWS, five scales of control, reward, community, fairness, and values, except workload, revealed a significantly higher accommodation state in the workplace. On the MBI-GS, those nurses that had mentors reported significantly lower levels of exhaustion and cynicism, while professional efficacy was significantly higher. In analysis by Structural Equation Modeling（SEM）, "mentors affect community in the workplace environment" and "mentors affect feeling of professional efficacy" were selected as the final models. The final model showed a significant relationship between the existence of mentors and the desire to continue working in the current place.

KEY WORDS

Mentor , Workplace Environment , Occupational Stress , Willingness to Continue Working , Nurse

Introduction

The word "mentor" derives from a character in the Odyssey, the well-known epic poem from ancient Greece, written by Homer. In the poem, Mentor was a friend of the Greek king Odysseus, and was placed in charge of his son, Telemachus. While the king went on expeditions, Mentor educated the king's son and became a good supporter, coach, the one who understood him best, and eventually Mentor led Telemachus to learn the art of kingcraft[1]. Based on these origins, "mentor" can be defined to mean: teacher, challenger, role model, supporter, and accompanying person[2], as well as coach, teacher, guide, sponsor, boss and master（guru）[3].

Mentoring was introduced to the Japanese nursing field from management organizations both in Japan and overseas after 2000 but has started to attract attention only recently, mainly because it was hiding behind the preceptorship which started to grow popular in the 1990s. Mentoring is said to be having been developing a growing attention as a strategy for developing the expertise of nurses[4]. That means the introduction of the concept of mentor does not only increase the number of nurses who stay in the organizations that they belong to, but also encourages their career development based on expertise[5].

There are various definitions of "mentor". Phllips-

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Jones[6], who has led the study of mentor in early industrial scenes and its application in practical settings, defines it as a contemporary term, describing mentors as the people who have sufficient impact on you to achieve your main objectives in life; they have the ability to promote your welfare, training and career, utilizing their associates and inherent knowledge. Through reviews of references regarding mentors and mentoring, Yonder[7] defines mentoring as traditionally the exchanges between experienced senior colleagues (mentors) and inexperienced junior colleagues (protégés) in which the former provide support and feedback to point directions regarding the latter's career plan and individual development through a strong emotional and interpersonal relationship. A mentor is characterized as an individual who often eliminates barriers in the organization and is involved in providing support to young members through their efforts to increase the opportunities for protégés to move up to higher positions. Furthermore, through reviews of references, Hisamura[8] states that mentoring studies started in the late 1970s in the setting of management organizations, mainly in the United States, and defines mentoring as the entire support activities and considerations given by mentors to mentees. Fujii et al.[9] says that in career development, mentoring means the actions where seniors and advanced members provide support and nurture junior and non-expert members, and those supporters are called mentors (regardless of their age differences). On the other hand, the Ministry of Health, Labour and Welfare[10] describes mentoring and mentorship as not being a convention that leading advisors directly become involved in, but rather something of a supporting role.

As mentioned above, there have been various attempts at ascribing meaning to terms, but thus far there is no consensus on the exact definitions of "mentor" or "mentoring". That may be one of the reasons that there has been very little research about the mentoring of nurses in Japan. Ono[5] reported that most nurses have their mentors as part of their career development and having them show a strong relationship with mentees' job satisfaction and career satisfaction. Kikuchi[11] examined the helpfulness of mentoring in career development in nursing jobs. The researcher indicated that nurses generally had less mentoring career support, but protégés who did receive mentoring from their supervisors and

superiors at work tended to have a higher sense of career objectives and, therefore, encounters with mentors was important. Furthermore, Imabori[12] identified that when a chief nurse exercised the mentoring function, it was very effective in promoting individual career development. The researcher also indicated that in the nursing field, it is preferable not only to rely on preceptorship but also to introduce support with a mentoring function. Additionally, Nakane[13] reported that while nursing supervisors developed their careers they had an average of 5.7 mentors. In this case, most of them were their supervisors, but what was actually learned from their mentors varied greatly between different individuals. Lucille[14] says educators of nurses can ensure positive results of the learning process by adopting mentoring tactics, and the relationship between mentors and protégés will become stronger.

Based on an examination of the above references, it can be indicated that the existence of mentoring function and mentors improves job satisfaction, is effective to obtain autonomy as a professional, and also promotes career development. However, there is hardly any research examining the influence of mentors on workplace environment and associated occupational stress. Although Ono[5] indicates mentoring increases the rate at which nurses choose to stay in an organization, the basis is weak and its relationship with willingness to continue working has not been reviewed enough in Japan. Therefore, the authors consider that examining these matters will contribute to reducing the number of nurses who drop out of work prematurely and also promote introducing mentoring in the workplace.

Based on these reasons, the purposes of this study are set as follows:

a) Conducting research on the conditions surrounding the existence of mentors on Japanese nurses, and

b) Examining how the existence of mentors affects the workplace environment and associated occupational stress as well as the influence on the willingness of nurses to continue working.

Operational definition of "mentor" in this study:

The authors defined "mentor" as somebody who is like a master and who provides support when one is troubled with the issues of future career and work-life balance, or simply dealing with problems at work. The person also supports one's development as a professional and

as a human being while giving advice to define personal dreams and support to achieve future goals. Not only mentors based on the workplace system but also persons who think that you are "mentor of this person". Therefore, it includes people who work together, people who have worked together, friends, acquaintances of the area, family members etc.

Methods

1. Study design

This is a relationship exploratory research investigation conducted by collecting data in a cross-sectoral manner using a questionnaire and then analyzing the quantitative data in a statistical way.

2. Subjects

As shown in Table 1, the research objects were some 7 private hospitals in the Kansai area; 4 large general hospitals and 3 medium-sized hospitals. Six hospitals were located in Prefecture A and 1 hospital was located in Prefecture B. Six of the hospitals are operated by medical corporations and 1 by a private entity. The numbers of hospital beds per hospital ranged between 147 and 681.

The subjects were a total of 1,517 nurses (nurses, assistant nurses, public health nurses, midwives) who

worked at each hospital. The number of collected survey slips were 1,342 and the average collection rate was 88.5% (80.5 - 97.8). The valid and invalid collection rate of each survey slip is shown in Table 2, demonstrating no significant difference between the subject hospitals. A total of 1,275 survey slips became the subjects for data analysis (average valid response rate = 95.0%).

3. Survey content

The survey slips each consisted of 5 parts with a total of 65 survey items:

1) Measurement of mentoring

After examining the existing measurement scales for mentoring and mentor[5) 15)], the authors adopted the Japanese version of the Mentoring Functions Questionnaire with 9 items (hereafter MFQ-9), which was originally developed by Scandura[16-17] and translated by Sakakibara et al.[18]. This study used MFQ-9 and measured operationally defined mentors. The operational definition of "mentor" was described and explained to the respondents on the questionnaire.

In MFQ-9, there is a question at the beginning asking whether the person has had a mentor or not in the past 1 (one) year. Those who answered "yes" to this question were then asked to answer a further 9 questions. These

Table 1 . Subjects, research objects were some 7 hospitals, subjects and questionnaires

hospital	Installation subject	Hospital type	Number of nurses and distribution	Recovered	Recovery rate(%)
1	Private / medical corporation	large general hospital	259	229	88.4
2	Private / medical corporation	large general hospital	172	159	92.4
3	Private entity	large general hospital	260	218	83.8
4	Private/social medical corporation	medium-sized hospital	113	91	80.5
5	Private/social medical corporation	medium-sized hospital	83	70	84.3
6	Private / medical corporation	large general hospital	450	399	88.7
7	Private / medical corporation	medium-sized hospital	180	176	97.8
	total		1517	1342	88.5

Table 2 . Subjects, Invalid response rate and Valid response rate of questionnaires

hospital	Number of responses	Missing value	①Invalid number	%	②Invalid number	%	③Invalid number	%	④Invalid number	%	Number of valid responses	Valid response rate
1	229	6	4	1.7	6	2.6	5	2.2	2	0.9	223	97.4
2	159	5	2	1.3	5	3.1	5	3.1	2	1.3	154	96.9
3	218	14	10	4.6	13	6.0	14	6.5	3	1.4	204	93.6
4	91	3	2	2.2	3	3.3	3	3.3	3	3.3	88	96.7
5	70	6	4	5.7	6	8.5	4	5.7	2	2.9	64	91.4
6	399	12	9	2.3	10	2.5	10	2.5	3	0.8	387	97.0
7	176	21	19	11	17	9.7	21	12	3	1.7	155	88.0
total	1342	67	50	3.7	60	4.5	63	4.7	18	1.3	1275	95.0

①:continued to work intention, ②:AWS, ③:MBI-GS, ④:MFQ-9

are subscales, each comprising of 3 items regarding [career support], [psychosocial support], and [role model type support]. [Career support] concerns the matters that affect career formation. [Psychosocial support] includes items in human relationship issues that affect emotional functioning and [role model type support] is the area related to behavioral model and affects on behavior. The subjects were asked to answer in the range of 5 to 1, from "Completely agree", which gained 5 points, to "Don't agree at all", which gained 1 point. The total points of subscale items became the subscale points: the higher the support from mentors, the higher were the points awarded. The reliability and validity of the Japanese version of MFQ-9 scale has been verified[18]. Cronbach's a coefficient was 0.82 - 0.88 (See Table 7).

2) Measurement of the workplace environment

To measure the workplace environment, the researchers used the Japanese version of the Areas of Worklife Survey-2011 version, which was originally developed by Leiter et al.[19] and translated into Japanese by Kitaoka et al.[20] (hereafter AWS). There are 27 questions in total in 6 subscales, including 4 items regarding [workload], 4 items regarding [control], 4 items regarding [reward], 5 items regarding [community], 6 items regarding [fairness], and 4 items regarding [values]. [Workload] means physical and psychological hardship derived from work, [control] means control related to work, [reward] means psychological reward obtained from work, [community] means the sense of coherence with people working together, [fairness] means the equitability related to promotion and treatment, and [values] means the value judgments related to their work. Once again, the subjects were asked to answer in the range of 5 to 1 from "Strongly agree" to "Strongly disagree". When a question was asked as a positive expression, "Strongly disagree" received 1 point and "Strongly agree" received 5 points, whereas if a question was asked as a negative expression, "Totally wrong" gained 5 points and "Totally right" received 1 point. Subscale points were the values calculated from the total number of points of each subscale divided by the number of items. The lower the points were, the less the individual and the workplace environment were matching, being an incompatible condition. The reliability and validity of the Japanese version of AWS has been verified. Cronbach's a coefficient in this study was 0.74 - 0.87 (See Table 7).

3) Measurement of occupational stress

Occupational stress was measured by the degree of burnout. Researchers used the Japanese version of the Maslach Burnout Inventory-General Survey, originally developed by Maslach et al.[21] and translated into Japanese by Kitaoka et al.[22] (hereafter MBI-GS). There are a total of 16 question items in 3 subscales. The subscales are [exhaustion], [cynicism], and depression of the [professional efficacy]. [exhaustion] is the exhausted feeling derived from work, [cynicism] means the attitude of losing enthusiasm and interest in work, placing oneself at a psychological distance from it. In the case of nurses, this can be indicated by a negative or cold attitude toward patients. Depression of the [professional efficacy] means the loss of confidence and less interest in the challenges of work. The subjects were asked to answer on a 7point scale of frequency based on a 1-year time frame (terms included: "never", "a few times a year", "once a month", "once a week", etc.). Scores of zero to 6 points were awarded to the answers of each item. The subscale points were the values calculated by the total number of points of each subscale divided by the number of items. The higher the points were, the stronger the exhaustion and cynicism, and the weaker the efficacy on job duty, which could then be interpreted as a higher degree of burnout. The reliability and validity of the Japanese version of the MBI scale has been verified by Kitaoka et al.[22]. Cronbach's a coefficient in this study was 0.85-0.91 (See Table 7).

4) Measurement of the willingness to continue working

Regarding willingness to continue working, the researchers created an original version of questions by referring to previous academic literature. There were 3 items; "I want to continue working at the section I am currently working in", "I want to continue working at the hospital where I am currently working", and "I want to continue working as a nurse". The subjects were requested to answer in 4 levels, "I don't feel like it at all", "I don't feel like it much", "I feel like it" and "I feel like it very much". "I don't feel like it at all" was ascribed 1 point, whereas "I feel like it very much" was awarded 4 points. The stronger the "willingness to continue working", the higher the points were.

5) Subjects' individual attribute and occupational factors

The questionnaire asked 9 items, including: gender, age, final academic background, marital status, qualifications

for current work, section in which they were working, working arrangements, number of years working at the current workplace and the number of years they had been working as a nurse.

4. Implementation of the survey

The survey was implemented after making requests to the nursing departments of the cooperating hospitals, and approval had been granted by each relevant ethics board. The researchers distributed survey slips to each department and left them with the subjects for a period of between 10 to 14 days, after which time they were collected by the researchers themselves. The survey was conducted from January to June, 2016.

5. Analysis methods

1) First, exploratory factor analyses (maximum-likelihood approach, oblique promax rotation) on MFQ-9, AWS and MBI-GS were conducted for factorial validity. Then, Cronbach α coefficients were calculated in order to check the inner coherence for each scale in this study.

2) Next, to grasp the condition of the existence of mentors, chi-square tests were conducted using the results of MFQ-9 to examine the ratio between subjects who had mentors and those who did not, and the ratio of the same by individual attribute and occupational factors. Also, the researchers checked the differences of scale points on AWS, MBI-GS and the willingness to continue working with the Mann-Whitney U test. Regarding the MFQ-9 scale points, the difference by individual attribute and occupational factor were checked. One-way analysis of variance was used for verification. In order to investigate the correlation between MFQ-9 and ASW, MBI-GS and the intention to continue work, Pearson's correlation coefficient was calculated.

3) To examine mentors' influences on the workplace environment, burnout and nurses' willingness to continue working, causal association was reviewed using SEM[23] [24] (structural equation modeling) with the model in Figures 1-3 as a theoretical framework. The hypothetical model of causal association between mentors and workplace environment (AWS) is shown in Figure 1, between mentors and occupational stress (MBI-GS) in Figure 2, and between mentors and willingness to continue working, Figure 3.

All data were analyzed using the IBM SPSS Statistics (SPSS) version 24.0J and Amos 24.0J.

6. Ethical considerations

The researchers explained the purpose, method, and ethical considerations regarding this study to both the facility administrators and nursing administrators of the cooperating facilities, verbally and in writing. For ethical considerations, we explained that the survey was going to be conducted anonymously and individuals would not be identified. Participation in the study was on a purely voluntary basis, non-participants would not suffer any disadvantage and participants could stop participating at any point. Privacy was protected as hospital names would not be revealed at conference presentations and/or when papers were submitted to magazines, and all collected data was strictly secured. After our explanation was given and signed and with written consent provided, the researchers started the study.

The researchers clearly stated that participation in the survey was on a volunteer basis, and that there was no disadvantage to non-participation. It was made clear that all survey slips were anonymous so no participating individuals could be traced. These details were described in written form to the subjects, and the researchers determined that the participants' submission of survey slips meant their agreement to cooperate with the study. Additionally, we requested that subjects put their survey slips in envelopes and seal them before putting them in collection bags. Researchers who did not have any conflict of interest with any of the subjects' supervisors collected the survey slips, making sure that none of the supervisors were around at the time of collection, thus avoiding the chance of their subordinates being coerced in any way.

This research was conducted with the approval of the Medical Ethics Committee of Kanazawa University (Review Number: 637-1).

Results

1. Subjects' individual attributes and occupational factors

Table 3 shows the subjects' attributes (gender, age, final academic background, marital status) and occupational factors (qualifications for current work, section in which they are working, working arrangements, number of years at the current workplace, and the number of years they have been working as a nurse). As a percentage, male nurses made up 11.1%, and female nurses, 88.9%. The age spread was between 19 and 65 years with an average age of 35.1 (SD=10.0). Regarding their final academic

Table 3 . Subjects, individual attribute and occupational factors   n=1275

attribute	n	%
Gender		
men	141	11.1
female	1134	88.9
Age		
20's (including 10's)	467	36.6
30's	377	29.6
40's	304	23.8
50's over	127	10.0
Final academic background		
Nursing academies	986	77.3
Nursing college	114	8.9
Universities with nursing department	106	8.3
Sanitary nursing department · communication system	69	5.4
Marital status		
Single	673	52.8
Married without children	129	10.1
Married and had children	375	29.4
Single mother · divorce history	98	7.7
Qualifications for current work		
nurse	1256	98.5
Health nurse	1	0.1
Midwife	18	1.4
Section in which they were working		
Surgical ward	375	29.4
Internal medicine ward	432	33.9
ICU/NCU and emergency unit	188	14.8
Operating room	60	4.7
Outpatient/Examination/Home-visit nursing/Regional medicine	170	13.3
Mixed ward/acute phase ward/recovery phase	50	3.9
Working arrangements		
Three-shift pattern	77	6.0
Two-shift pattern	1076	84.4
Only on a day shift or a night shift	122	9.6
Number of years working at the current workplace		
3 years or less	571	44.8
4 to 6 years	255	20.0
7 to 9 years	157	12.3
10 to 19 years	207	16.2
20 years over	85	6.7
Number of years they had been working as a nurse		
3 years or less	307	24.1
4 to 6 years	253	19.8
7 to 9 years	155	12.3
10 to 19 years	308	24.2
20 years over	252	19.8

Table 4 . Subjects, Conditions about the existence of mentors

attribute	No mentor n=520(40.8%)		Have a mentor n=755(59.2%)		total n=1275(100%)		Significant probability[a]
	frequency	%	frequency	%	frequency	%	
Gender							
men	57	40.4	84	59.6	141	100	.93
female	463	40.8	671	59.2	1134	100	
Age							
20's (including 10's)	181	38.8	286	61.2	467	100	
30's	147	39.0	230	61.0	377	100	.04
40's	136	44.7	168	55.3	304	100	
50's over	56	44.1	71	55.9	127	100	
Final academic background							
Nursing academies	380	38.5	606	61.5	986	100	
Nursing college	55	48.2	59	51.8	114	100	.02
Universities with nursing department	51	48.1	55	51.9	106	100	
Sanitary nursing department・communication system	34	49.2	35	50.7	69	100	
Marital status							
Single	275	40.9	398	59.1	673	100	
Married without children	59	45.7	70	54.3	129	100	.77
Married and had children	144	38.4	231	61.6	375	100	
Single mother・divorce history	42	42.9	56	57.1	98	100	
Section in which they were working							
Surgical ward	164	43.7	211	56.3	375	100	
Internal medicine ward	166	38.4	266	61.6	432	100	
ICU/NCU and emergency unit	81	43.1	107	56.9	188	100	.32
Operating room	23	38.3	37	61.7	60	100	
Outpatient/Examination/Home-visit nursing/Regional medicine	67	39.4	103	60.6	170	100	
Mixed ward/acute phase ward/recovery phase	19	38.0	31	62.0	50	100	
Working arrangements							
Three-shift pattern	30	39.0	47	61.0	77	100	
Two-shift pattern	432	40.1	644	59.9	1076	100	.14
Only on a day shift or a night shift	58	47.5	64	52.5	122	100	
Number of years working at the current workplace							
3 years or less	231	40.5	340	59.5	571	100	
4 to 6 years	101	39.6	154	60.4	255	100	
7 to 9 years	72	45.9	85	54.1	157	100	.90
10 to 19 years	78	37.7	129	62.3	207	100	
20 years over	38	44.7	47	55.3	85	100	
Number of years they had been working as a nurse							
3 years or less	114	37.1	193	62.9	307	100	
4 to 6 years	92	36.4	161	63.6	253	100	
7 to 9 years	63	40.6	92	59.3	155	100	.15
10 to 19 years	140	45.5	168	54.5	308	100	
20 years over	111	44.0	141	56.0	252	100	

**p<0.05, a:Chi-square test

background, the majority were finished nursing academies（77.3%）followed by those who had attended nursing college（8.9%）, universities with nursing department（8.3%）and others（5.4%）. In terms of marital status, the majority were single（52.8%）. Some 29.4% of the subjects were married and had children while 10.1% were married without children. Other status accounted for 7.7%. Almost all of the subjects were working with qualifications as licensed nurses（98.5%）and there were a few with qualifications as midwives（1.4%）and an even smaller number of health nurses（0.1%）. The sections where the subjects were working were as follows: internal medicine ward（33.9%）, surgical ward（29.4%）, ICU/NCU and emergency unit（14.8%）, outpatient/examination/home-visit nursing/regional medicine（13.3%）, operation room（4.7%）, and mixed ward/acute phase ward/recovery phase（3.9%）. The majority of the subjects were working a two-shift pattern（84.4%）followed by those only on a day shift or a night shift（9.6%）, whilst those following a three-shift routine made up（6%）. The number of years that the subjects had been working at their current workplace ranged between 0 and 45 years, with the average working time being 6.5（SD=10.0）years. The number of years that they had been working as nurses ranged between 0 and 43 years with an average of 10.8（SD=9.1）years.

2. Reliability and factorial validity of the scales

As a result of conducting exploratory factor analysis on MFQ-9, the researchers extracted the same factors as the original version（career support, psychosocial support, role model type support）and confirmed that items belonging

to each factor were the same, too. Table 7 shows the Cronbach α coefficient of each scale and reveals that there was sufficient reliability in the results. The result of the exploratory factor analysis on AWS extracted the same factors as the original version（workload, control, reward, community, fairness, values）. Some of the items belonging to each factor had a small factor loading for reverse-scored items. However, as shown in Table 7, because the Cronbach α coefficient on each scale were all higher than 0.74, the researchers determined there would not be any problem in seeing it as being the same as the original version. The researchers also conducted factor analysis on MBI-GS and confirmed the same factors with the original version（exhaustion, cynicism, professional efficacy）and the items belonging to each factor were the same. As shown in Table 7, the Cronbach α coefficient on each scale was sufficiently secured.

After confirming all of the above, we proceeded with the analysis.

3. Conditions about the existence of mentors

As shown in Table 4, there were 755 subjects who had had mentors over the course of the past year（59.2%）, while 520（40.8%）did not have mentors during the same period. Among those who had mentors, 59.6% were male and 59.2% female revealing little, if any, difference by gender. In regard to the age of subjects who had mentors, 61.2% of nurses were in their 20s（including teens）, 61.0% in their 30s, 55.3% in their 40s and 55.9% in their 50s（or older）. This revealed a significant difference among different age groups. There was also some difference among the academic background of subjects with

Table 5 . Subjects, difference of scale points for AWS, MBI-GS and the willingness to continue working correlated with whether the subjects had mentors or not　n=1275

	Scale	No mentor(n=520)	Have a mentor(n=755)	Significant probability[a]
		Average value±SD	Average value±SD	
1	Intention to continue (section)	2.38±0.78	2.60±0.79	.00
2	Intention to continue (hospital)	2.27±0.80	2.47±0.80	.00
3	Intention to continue (nurse)	2.93±0.76	3.16±0.71	.00
4	AWS workload	2.50±0.70	2.56±0.72	.09
5	AWS control	2.73±0.65	2.90±0.64	.00
6	AWS reward	3.02±0.49	3.16±0.48	.00
7	AWS community	3.38±0.70	3.58±0.62	.00
8	AWS fairness	2.74±0.56	2.90±0.52	.00
9	AWS values	2.68±0.61	2.93±0.60	.00
10	MBI exhaustion	4.18±1.48	3.88±1.52	.00
11	MBI professional efficacy	2.00±1.17	2.26±1.19	.00
12	MBI cynicism	2.81±1.62	2.29±1.48	.00

＊＊p＜0.01, a：Mann-Whitney's U test

mentors: 61.5% of those that had graduated from nursing academies, 51.8% of those from nursing colleges, 51.9% of those from universities with nursing departments, and 50.7% of those from public health nursing schools or had taken correspondence courses. Other factors did not reveal any significant differences.

Table 5 shows the Mann-Whitney U test result.

The difference of scale points for AWS, MBI-GS and the willingness to continue working correlated with whether the subjects had mentors or not. In all of the measurements, those who had mentors showed a significantly higher willingness to continue working. On the AWS, 5 scales, except [workload], revealed a significantly higher accommodation state in the workplace.

Table 6 . Subjects, Average value and standard deviation of individual attribute / occupation factor by MFQ-9 lower 3 scales   n=755

attribute	n	MFQ career support 10.97±2.47		MFQ psychosocial support 10.57±2.91		MFQ role model type support 11.41±2.63	
		Average value±SD	Significant probability[a]	Average value±SD	Significant probability[a]	Average value±SD	Significant probability[a]
Gender							
men	84	10.87±2.43	.60	10.37±3.19	.51	11.33±2.95	.76
female	671	10.99±2.47		10.59±2.87		11.42±2.59	
Age							
20's (including 10's)	286	10.96±2.45		10.37±2.96		11.42±2.73	
30's	230	10.89±2.56	.82	10.72±2.84	.53	11.46±2.45	.97
40's	168	10.99±2.31		10.68±2.73		11.33±2.64	
50's over	71	11.21±2.62		10.62±3.31		11.45±2.81	
Final academic background							
Nursing academies	606	11.02±2.43		10.60±2.88		11.46±2.58	
Nursing college	59	10.98±2.24	.51	10.83±2.81	.40	11.51±2.44	.50
Universities with nursing department	55	10.65±2.74		10.46±2.94		10.98±2.81	
other[b]	35	10.54±3.01		9.84±3.49		11.08±3.43	
Marital status							
Single	398	10.86±2.47		10.52±2.71		11.30±2.54	
Married without children	70	10.87±2.16	.03	10.69±2.82	.56	11.39±2.07	.18
Married and had children	231	10.95±2.48		10.50±3.11		11.44±2.84	
Single mother · divorce history	56	11.89±2.59		11.07±3.48		12.12±2.92	
Section in which they were working							
Surgical ward	211	10.93±2.52		10.19±3.03		11.34±2.78	
Internal medicine ward	266	11.12±2.50		10.62±3.01		11.40±2.71	
ICU/NCU and emergency unit	107	10.92±2.28	.74	10.71±2.75	.17	11.50±2.29	.98
Operating room	37	10.95±2.31		11.27±2.39		11.59±2.34	
other[c]	103	11.13±2.20		10.67±2.73		11.59±2.00	
other[d]	31	10.87±2.05		10.52±2.99		11.48±2.17	
Working arrangements							
Three-shift pattern	47	10.83±1.99		9.98±2.63		11.11±2.54	
Two-shift pattern	644	11.01±2.45	.42	10.60±2.89	.34	11.44±2.62	.68
Only on a day shift or a night shift	64	10.61±2.91		10.70±3.27		11.34±2.86	
Number of years working at the current workplace							
3 years or less	340	10.85±2.37		10.43±3.01		11.53±2.60	
4 to 6 years	154	10.69±2.47		10.36±2.72		11.33±2.75	
7 to 9 years	85	10.86±2.39	.68	10.31±2.98	.29	11.11±2.60	.53
10 to 19 years	129	10.98±2.69		11.41±2.72		11.56±2.59	
20 years over	47	10.97±2.47		10.40±2.85		11.06±2.64	
Number of years they had been working as a nurse							
3 years or less	193	11.30±2.20		10.19±3.10		11.73±2.52	
4 to 6 years	161	10.94±2.43		10.78±2.62		11.54±2.59	
7 to 9 years	92	10.82±2.84	.84	10.34±2.89	.46	10.98±2.86	.62
10 to 19 years	168	10.83±2.38		10.99±2.69		11.40±2.45	
20 years over	141	10.79±2.67		10.49±3.15		11.13±2.84	

*p<0.05.

a:Except for the gender (Mann-Whitney U test) one-way analysis of variance

b:Sanitary nursing department · communication system

c:Outpatient/Examination/Home-visit nursing/Regional medicine

d:Mixed ward/acute phase ward/recovery phase

Table 7 . Subjects, Cronbach's α coefficient・correlation matrix of the scale　　　　　　　　　　　　　n=755

| variable	α	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1 Intention to continue (section)		.69 **	.29 **	.27 **	.20 **	.22 **	.38 **	.29 **	.30 **	.32 **	.12 **	−.41 **	.10 **	.01	.07
2 Intention to continue (hospital)	—		.31 **	.25 **	.18 **	.18 **	.24 **	.28 **	.35 **	−.31 **	.08 *	−.38 **	.06	.00	.00
3 Intention to continue (nurse)				.02	.17 **	.14 **	.14 **	.07 *	.11 **	−.17 **	.18 **	−.29 **	.10 **	.11 **	.06
4 AWS workload	.74				.08 *	.17 **	.17 **	.27 **	.05	−.47	−.03	−.28	.05	.04	.05
5 AWS control	.76					.35 **	.24 **	.30 **	.30 **	−.09	.33 **	−.10	.10 **	.06	.05
6 AWS reward	.75						.37 **	.30 **	.27 **	−.23	.26 **	−.27	.05	.01	.01
7 AWS community	.87							.33 **	.25 **	−.22	.16 **	−.33	.07 *	.04	.13 **
8 AWS fairness	.78								.43 **	−.20	.11 **	−.26	.16 **	.01	.10 **
9 AWS values	.78									−.13	.16 **	−.25	.15 **	.00	.07 *
10 MBI exhaustion	.91										.11 **	.55 **	−.01	−.05	.01
11 MBI professional efficacy	.85											.06	.02	.04	−.04
12 MBI cynicism	.86												−.08	−.03	−.05
13 MFQ career support	.82													.48 **	.65 **
14 MFQ psychosocial support	.82														.54 **
15 MFQ role model type support	.88														

*p<0.05; **p<0.01.
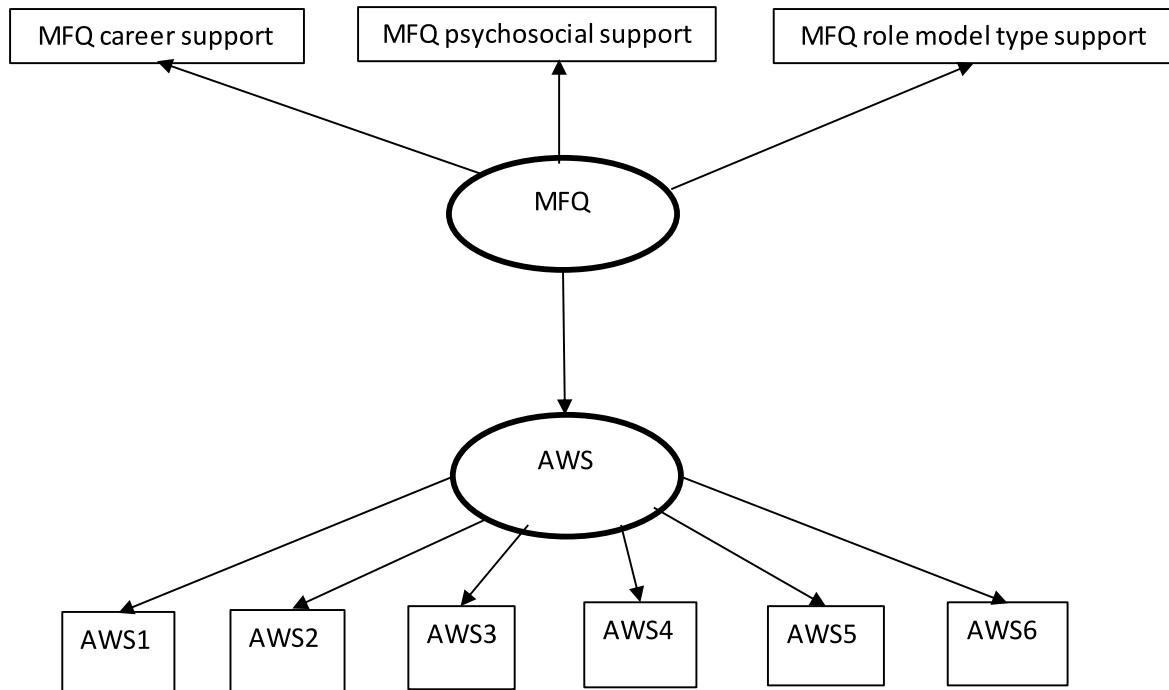
Figure 1 . The hypothetical model of causal correlation between mentors and the workplace environment(AWS)

MFQ career support   MFQ psychosocial support   MFQ role model type support

MFQ

MBI

MBI1   MBI2   MBI3
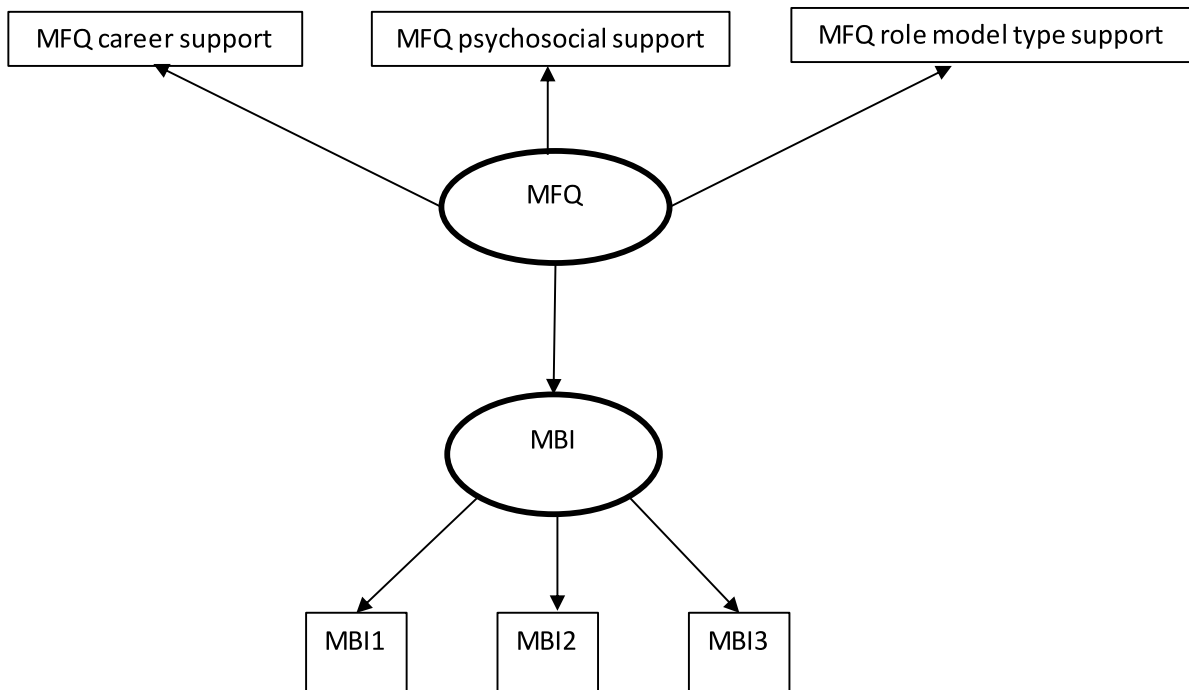
Figure 2 . The hypothetical model of causal correlation between mentors and occupational stress（MBI-GS）

MFQ career support   MFQ psychosocial support   MFQ role model type support

MFQ

Intention to continue

Intention to continue (section)   Intention to continue (hospital)   Intention to continue (nurse)
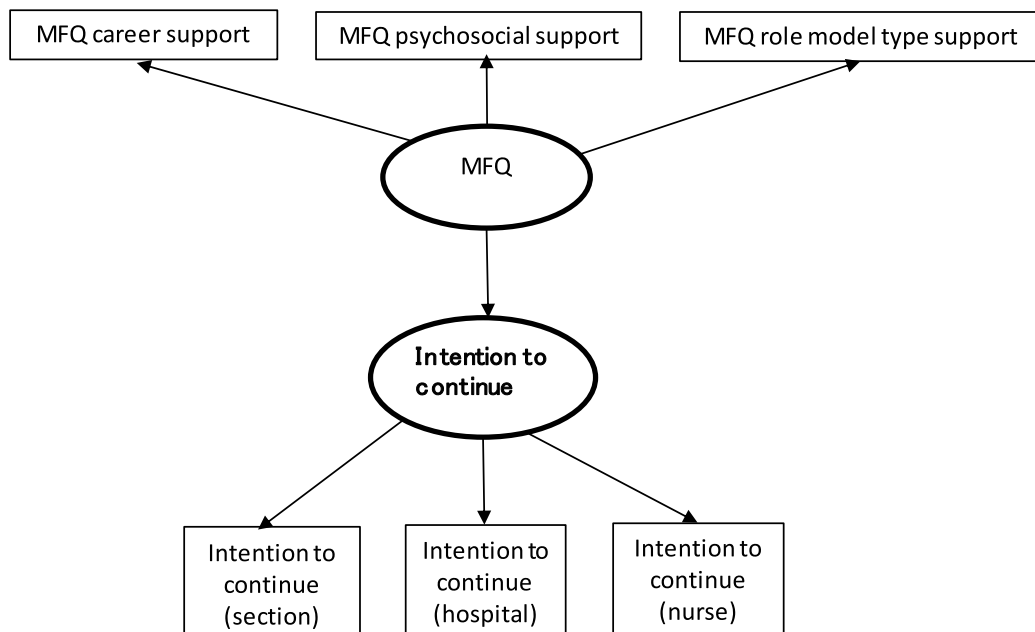
Figure 3 . The hypothetical model of causal correlation between mentors and the willingness to continue working
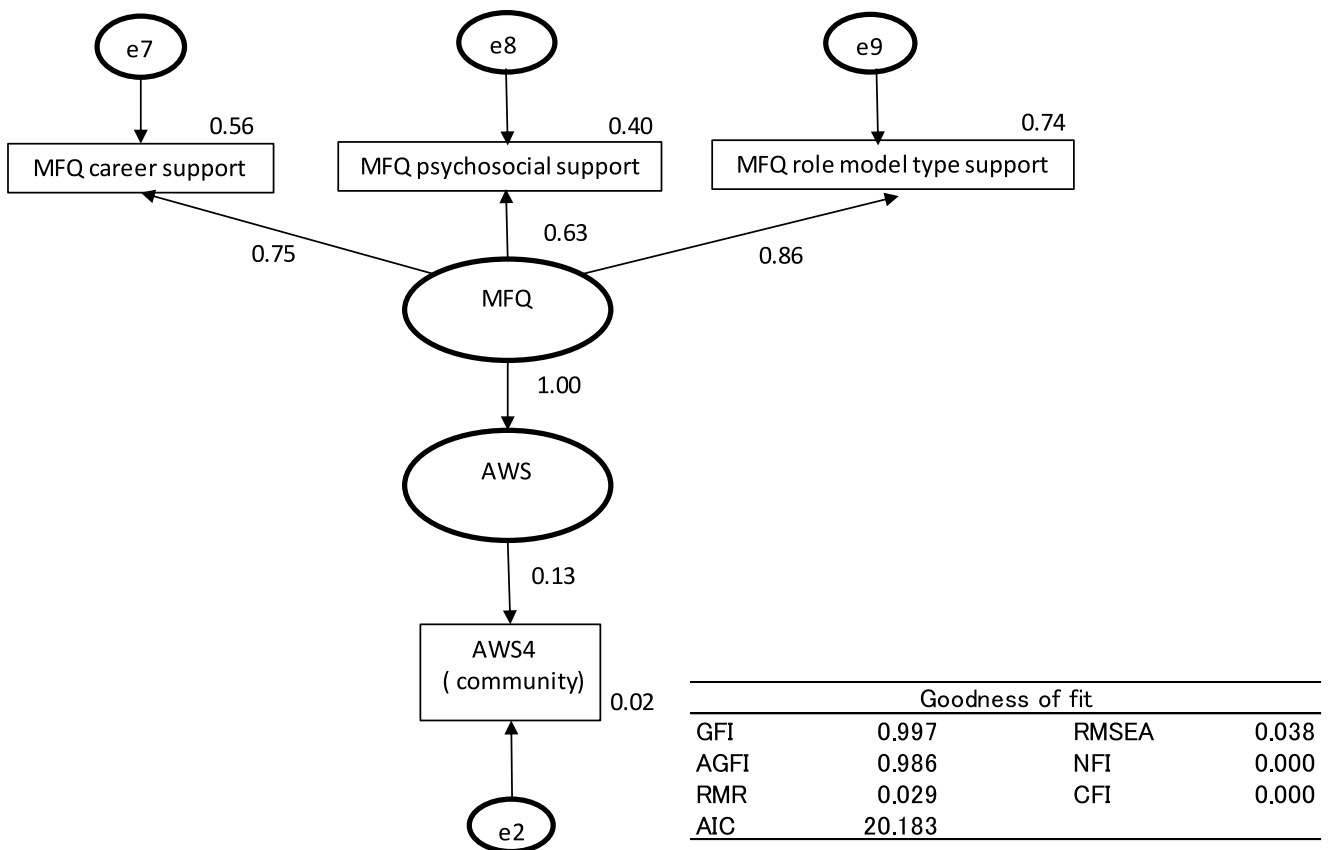
Figure 4 . The fit model of causal correlation between mentors and the workplace environment（AWS）
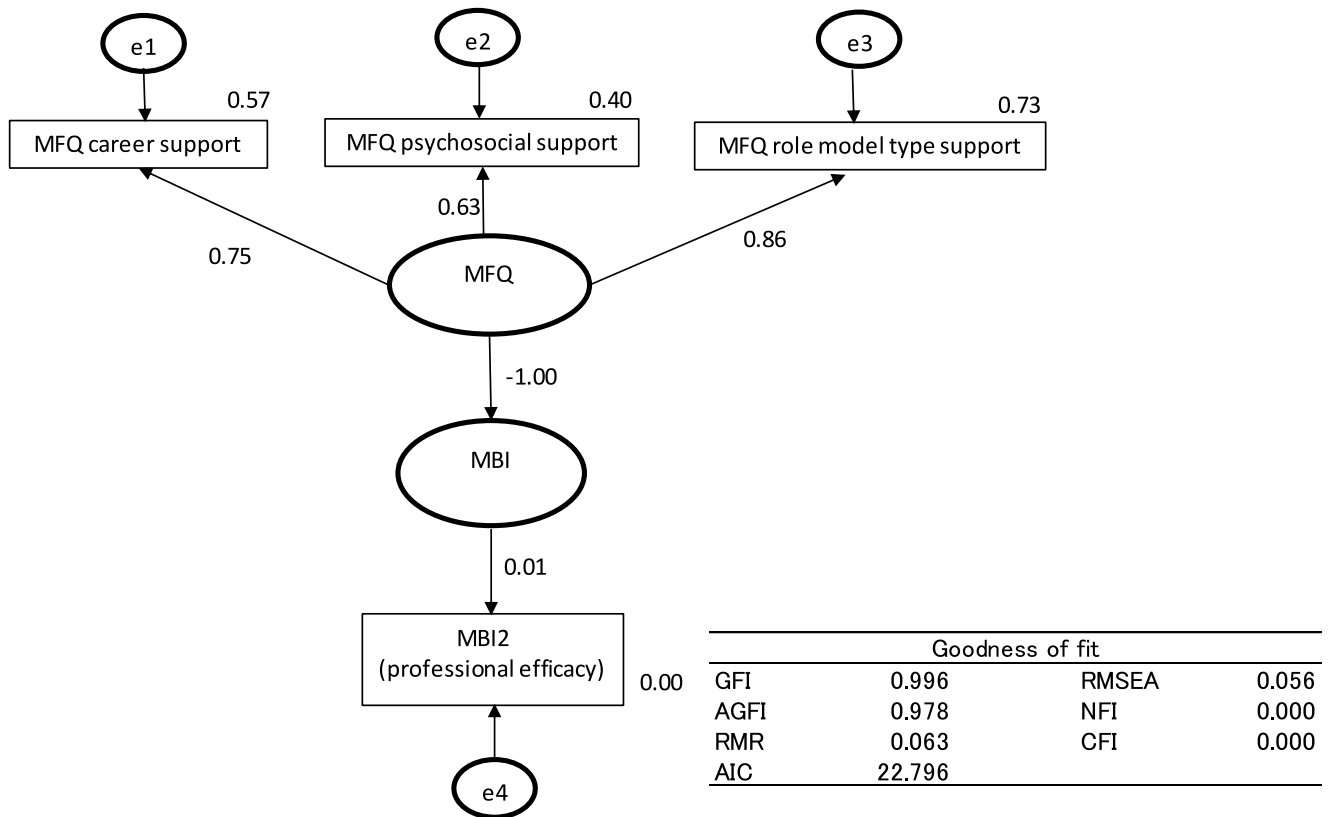
Figure 5 . The fit model of causal correlation between mentors and occupational stress（MBI-GS）
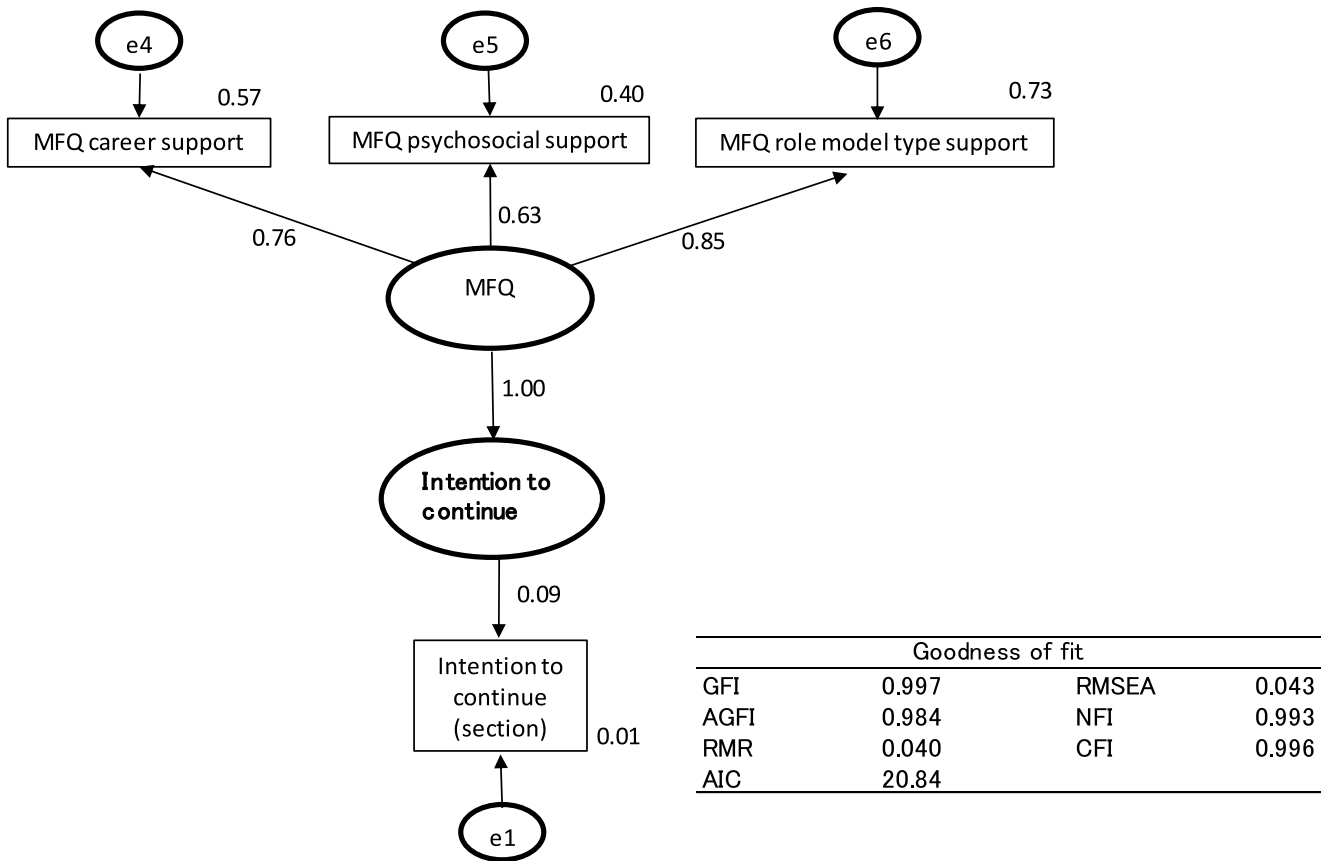
Figure 6 . The fit model of causal correlation between mentors and the willingness to continue working

On the MBI-GS, those subjects who had mentors detailed a significantly lower [exhaustion] and [cynicism], while [professional efficacy] was significantly higher.

Table 6 shows the subscale points of MFQ-9 by individual attribute and occupational factor. The value of [role model type support] was the highest at 11.41, followed by 10.97 for [career support] and 10.57 for [psychosocial support]. There were hardly any differences by individual attribute and occupational factor to report, except where variations in marital status disclosed some significant difference to points on [career support].

4. Causal correlation of MFQ-9 with AWS, MBI-GS, and the willingness to continue working

Table 7 shows the correlation of MFQ-9 with AWS, MBI-GS, and the willingness to continue working. [Career support] in MFQ-9 had a significant correlation with [control], [community], [fairness], and [values] in AWS. [Role model type support] exhibited a significant correlation with [community], [fairness] and [values] in AWS. However, [psychosocial support] and AWS did not present any significant difference. In addition, we could not find any significant correlation between MFQ-9 and MBI-GS. Regarding the relationship between MFQ-9 and the willingness to continue working, there was some significant correlation with [career support] and [psychosocial support] to report, but no significant correlation with [role model type support].

Next, based on the hypothetical model of causal correlation between mentors and the workplace environment (AWS) in Figure 1, mentors and occupational stress (MBI-GS) in Figure 2, and mentors and the willingness to continue working in Figure 3, the researchers loaded the observed variables to conduct SEM analyses. The results revealed a fit index, Figure 1, of 0.795 on GFI, 0.658 on AGFI, 0.175 on RMSEA, and 684.823 on AIC, which meant the fit of the model was insufficient. Therefore, the researchers deleted those items with the smaller coefficient value items in ascending order, and modified to the model that showed a correlation between mentors and fellowship. The resulting fit index was much higher, with 0.997 on GFI, 0.986 on AGFI, 0.038 on RMSEA, and 20.183 on AIC, so the fit of the data and

the model was now satisfactory (Figure 4).

In Figure 2, the fit index was 0.899 on GFI, 0.765 on AGFI, 0.207 on RMSEA, and 323.746 on AIC, the fit of the model being deemed as insufficient. Therefore, the researchers deleted the smaller coefficient value items in ascending order and modified it to the model that showed a correlation between mentors and job satisfaction. This reanalyzed data was greatly improved, providing a fit index of 0.996 on GFI, 0.978 on AGFI, 0.056 on RMSEA, and 22.796 on AIC. The fit of this data and the model was deemed to be sufficient (Figure 5). In Figure 3, the fit index was 0.816 on GFI, 0.572 on AGFI, 0.293 on RMSEA, and 613.835 on AIC, so the fit of model was again, inadequate. Therefore, the researchers deleted the 2 items with the lowest coefficient values, "I want to continue working at the hospital I am currently working" and "I want to continue working as a nurse", to modify the model that showed a correlation between mentors and "I want to continue working at the section I'm currently working" and then reanalyzed it. Once again, the fit index was greatly improved with 0.997 on GFI, 0.984 on AGFI, 0.043 on RMSEA and 20.840 on AIC. From these, the fit of the data and the model was considered acceptable (Figure 6). Confirming with the estimated values, the writers examined the models. With the above fix indexes in place, we selected Figure 4, 5 and 6 as our final models.

Discussion

1. Reality of mentors and their roles

In this study, 755 (59.2%) of the nurses had mentors. That means they had somebody who was like a master, who provided them with support when they were troubled with issues of future career development and work-life balance, or simply had problems at work. The person also supported their development as professionals and as human beings, whilst giving them advice to define their dreams and future goals. Notably, more than 60 percent of nurses in their 20s (including teens) and 30s had mentors, which was a higher figure than nurses in their 40s or older. Ono[5] says that mentors are people who strongly contribute to the career development of subjects and many of them are "senior members or supervisors at the time subjects started the job". It can be estimated that younger nurses, with less life and less work experience, were working with the support of people considered to be their mentors.

Regarding the roles of mentors, Ono[5] says that mentors seek to build a trusting relationship, always listening to the other side to prevent them from prejudging based on assumptions. They try to understand and encourage, emphasizing positive things about the person, and always watch over their protégés. Additionally, Ronald[25] says that the role of a mentor is based upon a commitment to mentoring, becoming a provider of resources as an expert, the sharing of professional problems, encouraging mentee's ideas and work, providing constructive and helpful criticism, supporting a mentee to move up in a way that matches their ability, supporting a mentee clearly and comprehensively in a timely manner, providing adequate feedback to mentee's questions, respecting mentee, accepting mentee, and sharing the results of successful actions and advantages with their mentee. In this study, the researchers asked whether the subjects had had mentors or not in the past 1 (one) year, and we never asked about specific details regarding the support they had received from their mentors. However, the results from the nurses who answered that they had had mentors showed significantly higher applicability in 5 items pertaining to the workplace environment ([control], [reward], [community], [fairness], [values]), except [workload]. Significantly lower burnout conditions, and a significantly higher willingness to continue working (section, hospital, as a nurse), indicated that [career], [psychosocial], and [role model type] support] from mentors made nurses feel more at ease and better able to blend in with their workplace environment, making them less likely to fall under the pressures of burnout and to continue to work.

In nursing education, a role model is said to be one whose words and deeds can be learnt from, and someone close enough to mentees to monitor their behavior and likely to be a superior in the nursing field[26]. In other words, the role of a mentor is being able to demonstrate good examples as a nurse, provide constructive advice to protégés, being able to indicate future direction to mentee as a nurse, always watching and supporting protégés, and providing comprehensive backing which includes both psychological and social support aside from simple professional assistance. Looking at the scale points in MFQ-9, where [role model type support] scored the highest followed by [career support] and [psychosocial support], it is possible to say that the results from this

study reflect the matters described above.

2. Mentor's influence to workplace, occupational stress and the willingness to continue working

Correlations among scales did not show a significant relationship between mentors and workplace environment ([workload], [control], [reward], [community], [fairness], [values]). From modeling analysis by SEM, "mentors affect community in the workplace environment" was selected as a final model. In this study, "community" indicates human relations in a workplace and means "in the workplace, workers rely on each other's help, cooperate together and communicate openly to achieve their individual roles." It can be considered that mentors are the element that affects human relations rather than affecting the workplace environment such as [workload], [control], [reward], [fairness], and [values]. Regarding correlations of scales, there was no significant relationship between mentors and burnout which meant occupational stress. From modeling analysis by SEM, the selected final model was "mentors affect feeling of efficacy on job duty". Regarding the relationship between mentors and the willingness to continue working, it can be considered SEM analysis showed a significant relationship with "I want to continue working at the section I am currently working" rather than with "I want to continue working at the same hospital I am currently working" and "I want to continue working as a nurse". Zhang et al.[27] conducted a systematic review on the effect of mentors, focusing on novice nurses, and reported that mentors were recognized to have an influence on quit rate[28-31], job satisfaction[28-30, 32], and nursing practice ability[31-33]. Other than those, Beecroft, et al.[34] reported that mentors were effective at reducing stress, whilst Beecroft et al[34], Mills & Mullins[30], and Scott & Smith[31] mentioned the effect of improvement in the feeling of self-efficacy. This study did not only focus on novice nurses, but examined the causal association between nurses and mentors and their willingness to continue working. As mentioned above, the existence of mentors increases the willingness to continue working, which supports the results of earlier research from Faron & Poeltler[28], Halfer et al.[29], Mills & Mullins[30], and Scott & Smith[31]. The researchers consider that this study, too, indicates that mentors are effective in improving Japanese nurses' feeling of job efficacy in a similar way that the 3 overseas studies reported[30-31, 34]. Latham et al.[35-36] describes how mentors play a critical role in supporting

the development of an active and constructive workplace environment. This study showed the contribution that mentors make in developing good human relations among the fellowship of nurses in the workplace environment. Beecroft, et al.[34] reported that mentors were effective to reduce stress. However, they directly asked the subjects, "Do mentors reduce your stress?" In this study, the effects of mentors on various aspects of workplace life ([workload], [control], [reward], [fairness], [values]) were not confirmed. It is therefore necessary to conduct further studies in the future regarding the influence of mentors on factors relating to occupational stress, utilizing different research methods.

The researchers concluded that mentors directly affect [community], [professional efficacy] and the willingness to continue working in the nurses' workplace.

Identified limitations of this study and possible areas for future research are:

1) The subjects were all living in the Kansai region. It would be advisable to expand the area of coverage in future research.

2) In particular, it is necessary to further examine the effects and the influence of mentors and mentoring on novice nurses, in order to improve prospects for an increased rate of job retention.

3) We do not clarify the specific position of the mentor and we need to investigate in the future.

4) It is a large investigative task to examine how to define mentors in the workplace environment, occupational stress and the willingness to continue working, and to build an appropriate model. As with this study, future research should seek to clarify both the affect that mentoring has on Japanese nurses as well as the role of mentors themselves.

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メンターが看護師の職場環境、職場ストレス、
および就業継続意思におよぼす影響に関する研究

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要　　旨

　本研究の目的は、日本の看護師を対象として、メンターの存在に関する実態を調べ、メンターの存在が職場環境や職業性ストレスにどのような影響をおよぼすか、さらに看護師の就業継続意思への影響を検討することであった。

　質問紙法により横断的にデータ収集を行い、対象者は、7つの病院に勤務する全看護者とし、合計 1,517 名であった。有効回答数は、調査票 1,275 票（平均有効回答率＝ 95.0%）であった。メンターは日本版 Mentoring Functions Questionnaire-9 items、職場環境は日本版 Arear of Worklife Survey（AWS）、職業性ストレスは日本版バーンアウト測定尺度 Maslach Burnout Inventory-General Survey（MBI-GS）を用いて測定した。看護師の就業継続意思は、独自に作成した尺度を使用し測定した。

　約6割の看護師がメンターを持っていた。特に、20 歳代や 30 歳代の看護師の中でメンターを持つ者の割合が、40 歳代以上の看護師と比べて高かった。メンターを持つ看護師のほうが、就業継続意思が有意に高かった。AWS で測定した職場環境に関しては、仕事の負担を除く裁量権、報酬、共同体、公平性、価値観の5つの側面による職場適合状態が有意に高くなっていた。また、MBI-GS に関して見ると、メンターのいる者の疲弊感とシニシズムが有意に低く、逆に職務効力感が有意に高くなっていた。最終的に共分散構造モデル解析をした結果、メンターは、看護師の職場環境の中でも共同体に影響を、また職務効力感に影響をおよぼしているという最終モデルが選ばれた。就業継続意思との関係については、メンターは今勤務している部署で働き続けたいとの間に有意な関係が認められた。