



Factors that affect clinical nursing competence and continuing education for Japanese mid-career generalist nurses

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博士論文

Factors that affect clinical nursing competence and continuing education for Japanese mid-career generalist nurses

(中堅ジェネラリスト・ナースの看護実践能力

および継続教育に影響する要因の検討)

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Abstract

The purpose of this study was to identify associations between clinical nursing competence of mid-career generalist nurses and 3 factors, institutional, personal and professional, by investigating the current continuing education (CE) support system in medical institutions. We conducted surveys of nurse administrators and mid-career generalist nurses with about 5 to 20 years of experience in prefecture A. The surveys consisted of a questionnaire which listed items in 3 factors and the scale to measure clinical nursing competence. We obtained valid responses from 31.0% of the nurse administrators (109/352) and 47.9% of the generalist nurses (632/1,320). We studied the relationship between each item in 3 factors and clinical nursing competence score (mean = 73.1 ± 11.1). We found associations in all factors: institutional, 16/28 items; personal, 10/13 items; and professional, 13/14 items. We found a weak correlation between years of experience and clinical nursing competence. Our data suggested that professional factors have more impact on clinical nursing competence of mid-career generalist nurses rather than personal and institutional factors. The importance of implementation and utilization of professional development systems and the need of a structured CE program backed by regional CE network and training accreditation system for mid-career generalist nurses was suggested.

Key words

Mid-career nurse, Generalist, Continuing education, Clinical nursing competence, Factors

Introduction

In recent years, an increased public awareness of health and the promotion of advanced medical treatment have all contributed to increased efforts in improving educational standards of health care professionals. Nurses are expected to provide higher quality nursing services that are based on users' perspectives. Responding to such demands of the present age, in April 2010, the Act on Public Health Nurses, Midwives, and Nurses and the laws regarding promotion of securing human resources were partially revised making clinical training a mandate for new nursing graduates. The revised provision mandates hospital administrators to make efforts to accommodate such training opportunities, and at the same time, it also requires nurses to take the initiative to develop and improve their own competencies.

Meanwhile, the Japanese Nursing Association (JNA) reviewed their "Continuing Education Standards" originally issued in 2000 and issued its second version in 2012¹⁾. The standards are intended to help maintain and improve the quality of nursing services. Also, to comply with the Code of Ethics of the Nursing Profession which specifies that each individual nurse needs to "always strive to maintain and develop their competence by continuous learning, as part of their own responsibility," nursing professionals are taking initiatives to engage in CE and self-improvement opportunities for their professional development. With the aim of promoting professional and career development for nurses, JNA established a credentialing system for Certified Nurse Specialists in 1994, Certified Nurses in 1995, and Certified Nurse Administrators in 1998. The renewal of these certifications are required every 5 years, and the credential system has been a strong motivation for nurses to maintain and develop advanced professional competencies. The Japanese Midwives

Association launched a CE point system in 2009.

However, such development in the field of nursing is only applicable to advanced specialists rather than all members in these professional organizations. The number of working nurses in Japan was about 1,450,000²⁾ at the end of 2012, while the number of JNA members was about 680,000 at the end of 2013³⁾, representing less than half of all professionals. Moreover, only a small proportion of members participates in training programs offered by the association. The reason behind this small membership size may lie in the Japanese nursing licensing system which allows licensees to hold their licenses without renewal requirements which is commonly implemented in other countries⁴⁾. Further, for nurses, there is no training credit accreditation system that is similar to what the Japan Medical Association or the Japan Dental Association has for recognizing CE efforts of all of their members or the Japan Pharmaceutical Association's life-long learning support system and clinical ladder system. Due to this fact, not all nursing professionals with licenses may be necessarily engaging in training efforts to maintain and develop their competence. Other reasons which limit nurses' training participation are nurse shortages and lack of financial resources in their workplace. Since each medical institution employs a different support system for their staff's CE, the institutional factors are likely to have an impact on an individual's CE involvement.

It is suggested that advanced clinical nursing competence links to a higher quality of nursing care⁵⁾; therefore, each individual nurse needs to develop their own clinical nursing competence through clinical experiences as well as CE throughout their career. More facilities are now trying to implement professional development systems utilizing either the Clinical Ladder or the Career Development Ladder systems. Based

on the ICN Framework of Competencies for the Generalist Nurse⁶⁾ developed by the International Council of Nurses (ICN), JNA has developed a Standardized Clinical Ladder for Generalists⁷⁾. This guideline allows learners to set the learning phase according to their clinical nursing competence and choose their own training. However, this Clinical Ladder CE system has been adopted by only a small proportion of medical institutions, thus the education system for generalist nurses as opposed to that for new nurses or specialists has not yet been accepted across the country. Because there isn't any structured license renewal system with standardized CE, the quality of nursing is up to the individual nurse's voluntary learning efforts. Because of this, not many mid-career generalist nurses are engaging in research activities, which are important for professional development. The need for more nursing research has been pointed out in the literature^{8,9)}.

Therefore, this study investigates continuing nursing education by understanding the current CE support system in medical institutions and identifying the relationships between clinical nursing competence and 3 categories of factors, institutional, personal and professional, which may affect clinical competence for mid-career generalist nurses.

Methods

Conceptual Framework (Figure 1): Continuing nursing education by understanding the current continuing education support system in medical institutions (Survey 1) and identifying the relationships between clinical nursing competence of Mid-Career Generalist nurses and 3 factors, institutional, personal and professional (Survey 2).

Definition of Terms

1. Mid-career nurses: Nursing professionals with 5 to 20 years of clinical experience, who are not certified nurses, nurse specialists or nurse administrators.
2. Generalists: Those who can appropriately utilize their knowledge, skills and competencies based largely on their implicit knowledge gained through experience and CE regardless of areas of specialization or nursing practice¹⁰.
3. Continuing nursing education: It includes post-graduate education, in-service education and other types of education for licensed nurses¹¹.
4. Clinical nursing competence: Not only care provided to patients, it includes one's ability to achieve expected outcomes within their nursing team, department, or institution such as a hospital.

Design

This is an exploratory fact-finding study.

Data collection method and collection period

Using a hospital roster of prefecture A as of April 1, 2013 as a reference, we extracted a list of all medical institutions in prefecture A, and those institutions from which we obtained consent to participate were included in the study. Prefecture A is sometimes referred to as the epitome of the Japanese archipelago. One hundred and nine (109) nurse administrators from 352 medical institutions in prefecture A who provided consent were included (Survey 1). One thousand three hundred twenty (1,320) nursing professionals with 5 to 20 years of clinical experience, who are not certified nurses, nurse specialists or nurse administrators, and who provided consent were included (Survey 2). Self-administered questionnaires

were used to collect data, and the mailing method was used. We distributed a packet which included a letter asking their cooperation to participate in the study, a leaflet that described study objectives, a consent form, and a form to fill out the number of mid-career generalist nurses in their department who may be able to participate in Survey 2. The data collection period was from June to September, 2014.

Questionnaires

The questionnaire for nurse administrators was designed based on previous studies^{12,13}. It consisted of 18 items. The content of the questionnaire was reviewed by experts of nursing education and nursing administration. Prior to conducting the study, we also pilot tested the survey twice to determine the validity of the questions. After content validity and face validity were checked, the questionnaire was revised (Survey 1).

The questionnaire for mid-career generalist nurses was created based on preceding studies^{14,15} and consisted of 58 items. To measure clinical nursing competence of mid-career generalist nurses, "Clinical Practice Proficiency Measurement Scale for Mid-career Nurses Ver.3"¹⁶ (hereinafter "clinical nursing competence scale") was used. Sato et al. reported that some nurses with 5 or more years of experience had enough competencies that would qualify them to be "proficient". The clinical nursing competence scale is a self-administered assessment scale developed for competent nurses with about 5 years of experience. The scale consists of 21 items to self-evaluate their own clinical competence, and items are classified into 4 factors: "ability to contribute to development of the nursing team," "ability to provide quality care," "ability to encourage patient participation in medical care," and "voluntary involvement in current circumstances."

The highest score of the measurement scale is 105. The higher the score, the higher the clinical nursing competence of mid-career nurses. After confirming the construct validity of the scale with a cumulative contribution ratio, the researchers tested for differences between two groups of nurses: a group with 1 to 2 years of experience and a group with 5 to 9 years of experience. They reported that significant differences were observed at 0.1% for all of the items. In short, this scale has sufficient discriminative power to differentiate "proficient" from "novice" or "competent" nurses. The reliability and validity of the scale has been confirmed in a previous study. We obtained approval for the use of the scale from the developer. The content of the questionnaire was reviewed by experts of nursing education and nursing administration. Prior to conducting the study, we also pilot tested the survey 3 times. The first test survey was conducted to determine the face validity of the questions. Then we conducted the pilot test 2 more times to confirm the validity of our questionnaire using the retest method (Survey 2).

Data Analysis

We calculated a correlation coefficient between age and clinical nursing competence, and years of experience and clinical nursing competence. We linked the same items of Surveys 1 and 2 with a survey number and studied if the association with clinical nursing competence is present between groups of each item. When there were two groups in an item, we performed an unpaired t-test. For an item with 3 groups or more, we used one-way test analysis of variance. Data analysis was performed using statistics software EZR¹⁷⁾ with 5% as the level of significance.

Ethical Considerations

We stated in the study description that the participation in the study was voluntary, and a refusal to participate would involve no loss of benefits, as well as that they could withdraw from the study at any time. We also included the explanation that the participants should keep the number attached to the questionnaire form so that we could accommodate the withdrawal request during the study period smoothly. We conducted the survey in a way that a person could not be identified in order to protect anonymity and privacy of the participants. Individual mailing method was used for data collection. The study was conducted after obtaining the approval of the Health Sciences Ethics Committee of Kobe University, Graduate School of Health Sciences.

Results

Participants

We asked 352 medical institutions to participate in this study, and responses obtained from 109 nurse administrators (response rate of 31.0%) were included in the analysis for Survey 1. For Survey 2, we distributed the questionnaire to 1,320 mid-career generalist nurses from 100 medical institutions from which we obtained consent to participate in the study. Out of the total of 689 nurses who returned their responses (response rate of 52.2%), 632 nurses who provided responses for all items in the clinical nursing competence scale were included in the analysis (response rate of 47.9%).

The results of the clinical nursing competence measurement for mid-career generalist nurses

Table 1 shows the results of the clinical nursing competence measurement. This measurement scale

demonstrated high reliability with an overall Cronbach's alpha at 0.88. In this study the lowest score was 32, the highest score was 103, and the mean score was 73.1 with SD of 11.1.

The association between institutional factors and clinical nursing competence revealed by Survey 1

From the results of Survey 1, we found the percentages of institutions that have implemented different types of professional development systems: Management by Objectives, 74.3%; the Clinical Ladder or Career Ladder systems, 62.4%; and the Career Record Book or Portfolio, 53.2%. In addition, the percentages of institutions that have utilized those systems were as follows: Management by Objectives, 75.3%; the Clinical Ladder or Career Ladder systems, 57.4%; and the Career Record Book or Portfolio systems, 55.2%. Regarding in-hospital research, 83.5% of respondents said they "engage in nursing research as a part of in-service education," 85.3% said they "give research presentations in the hospital," and 72.5% said they "give presentations at conferences." Institutional factors that were associated with nursing clinical competence were the following 7 out of 18 items: operating entity, type of hospital, the approved number of beds, the number of nurse specialists, the number of certified nurses, engagement in nursing research as part of in-service education, and giving presentations at conferences (Table 2).

The association between institutional factors and clinical nursing competence revealed by Survey 2

Out of 10 items in the institutional factor category, 9 items were found to be associated with clinical nursing competence: "implementation of Clinical Ladder or Career Development systems," "my own ladder level," "evaluation of ladder level," "utilization of ladder system," "implementation of Management by Objectives," "utilization of Management by Objectives," "having the Career Record Book or Portfolio,"

"utilization of Career Record Book or Portfolio," and "nursing department in-service training for nurses who have passed 5 or more years after graduation" (Table 3).

The association between personal factors and clinical nursing competence revealed by Survey 2

The mean age of the participants was 38.2 ± 7.7 years, and the mean years of experience was 13.6 ± 6.5 years. Weak correlations were observed between age and clinical nursing competence ($r = 0.24$) and between years of experience and clinical nursing competence ($r = 0.31$). Out of 13 items in the personal factor category, 10 items were associated with clinical nursing competence: "age," "years of experience," "marital status," "certification other than nursing," "membership in professional associations other than JNA," "experience in teaching novice nurses as a preceptor," "experience in supervising practicum," "experience in being in charge of the nursing unit," "experience as a committee member of nursing department," and "experience as a hospital committee member". We found that mid-career generalist nurses were taking various roles other than providing direct care to patients as shown in the following data: "experience in teaching novice nurses as a preceptor, "84.7%; "experience in supervising practicum," 50.5%; "experience in being in charge of the nursing unit," 91.9%; "experience as a committee member of nursing department," 84.8%; and "experience as a hospital committee member," 53.3% (Table 4).

The association between professional factors and clinical nursing competence revealed by Survey 2

Professional factors that were associated with clinical nursing competence included the following 13 out of 14 items: "participation in in-service training," "engagement in nursing research," "research presentation in the hospital," "research presentation at conferences," "attendance at conferences,"

"participation in training organized by JNA," "participation in training that is not organized by JNA," "difficulty in attending training outside the hospital," "reading professional journals," "engagement in self-learning programs," "teaching experience," and "having career development goals" (Table 5).

Discussion

Participating facilities for this study consisted of 66 medical corporation facilities (60.6%) and 21 public medical institutions (19.3%). Although the proportion of public medical institutions was larger than the national data, we considered the proportion close enough to the national data. Previous studies reported that nurses who score 67 points or more on the clinical nursing competence scale are considered "proficient"¹⁸⁾ therefore, the participants in this study are generally found to fall into this category. The distribution of the mean total score had a small deviation, and the high reliability of the scale was confirmed by our data. Below, we discuss institutional, personal and professional factors that affect clinical nursing competence of mid-career generalist nurses and explore what is expected in future CE.

The association between institutional factors and clinical nursing competence

For all 3 professional development systems, Management by Objectives, the Clinical Ladder or Career Ladder systems and the Career Record Book or Portfolio systems we investigated, significant differences in the score of clinical nursing competence were found between the groups depending on the status of system implementation as well as the status of system utilization. The Clinical Ladder system assesses "competence" and Management by Objectives covers "accomplishment and performance. With Portfolio, "the process of efforts" which does not necessarily appear in accomplishments or performance can be

evaluated¹⁹⁾. A study also reported that an implementation of Management by Objectives increases job satisfaction, and regardless of the level of goal achievement, it improves one's continuous commitment so that employees are more willing to stay on the job²⁰⁾. However, the reality of this implementation is that only the formality of the system such as goal setting and interview processes has been implemented, and many institutions do not understand the fundamental of the system. In our questionnaire for mid-career generalist nurses, 69.8% of the respondents said that the facility they're employed is implementing Management by Objectives, making it the most implemented system of all 3 professional development systems we investigated. Because of this, the implementation of Management by Objectives can be considered as a factor that affects clinical nursing competence of mid-career generalist nurses; however, based on the negative responses such as, "goal-setting interviews are not conducted," 2.3%; "don't know if the interview is being conducted," 1.8%; "it is not being utilized," 33.3%, nurse administrators are expected to examine if the system is being utilized to produce positive results.

The Clinical Ladder program that is being utilized in many medical institutions is based on either 4 stages of clinical nursing competence set out in the "Standard Clinical Ladder for Generalists" by JNA, or the skill acquisition model suggested by Patricia Benner²¹⁾. The Clinical Ladder program provides individual nurses a milestone for their own development. Meanwhile, it also serves as an effective tool for the nursing department to provide CE that suits the learning needs of their nurses. Because of its characteristics, many institutions have adopted this system and each institution sets its own ladder level, the number of stages as well as goals for each stage so that the program varies from institution to institution. Our data also showed

that the range of stages varies from 3 to 10. In our questionnaire, 60.8% of the mid-career generalist nurses responded that "The Clinical Ladder or Career Development Ladder is implemented," and significant differences in nursing clinical competence were found between the group that implements the program and the group that does not. Many reports have addressed the positive effects of the implementation of the Clinical Ladder program. "It encourages voluntary participation in training outside the hospital which leads to improved motivation for their own development, and it energizes mid-career nurses."²² "In CE, it creates individualized steps and increases nurses' motivation which leads to improved clinical competence, thus the quality of nursing services improves across the institution"²³. However, there are not many reports with concrete evidence to support that. Thus, our data suggests that the Clinical Ladder program may positively affect clinical competence of mid-career generalist nurses and can serve as the basis for the benefit of the program. The proportion of the respondents who utilize the Clinical Ladder program remained at 35.2%, which is about half of the proportion of those who utilize Management by Objectives. In addition, among those nurses who indicated that the program is being implemented, some still responded that they "do not know my own ladder level," or "do not know if the evaluation is carried out," suggesting the program is not being fully utilized by the institution. Therefore, it is important to examine how the Clinical Ladder program is being utilized to help produce results, which in this case to improve clinical nursing competence, rather than just evaluating if the program is being adopted by institutions.

From the perspective of career development, the Career Record Book, which records nurses' own professional development, and the Portfolio systems are recommended to use for goal-setting interviews and

when updating ones' Clinical Ladder²⁴). The percentage of implementation of the Career Record Book or the Portfolio program is 38.9%, which is lower compared to other programs; however, our data suggesting its positive effects on clinical competence of mid-career generalist nurses can serve as the basis for the benefit of the program.

Our data confirmed that these professional development systems are the factors that affect clinical nursing competence. Nursing departments are expected to implement these systems and promote using a combination of these systems. It is important to note, however, that these systems are only management tools; therefore, nurses themselves need to make an effort to utilize these tools effectively. When both the institutions and the nurses deepen their understanding of the benefits of these professional development systems, they will be able to utilize the systems effectively, which will then lead to improved clinical competence of mid-career generalist nurses, and moreover, to improved quality of nursing care.

The association between personal factors and clinical nursing competence

The study participants consisted of 94.3% female and 5.7% male, which was similar to the national average ratio²⁵). It has been reported that years of clinical experience are associated with clinical competence^{26,27}), our study results also confirmed that claim, showing a weak correlation. However, years of experience alone cannot improve one's nursing clinical competence.

Mid-career generalist nurses are taking various roles besides providing direct care to patients, such as teaching/training novice and student nurses, being a member of a hospital committee or being in charge of a hospital ward. And, our data also confirmed this situation and suggested that these experiences in taking

various roles are likely associated with their clinical nursing competence. One study reported that although some nurses assume a role assignment as an opportunity to respond to the institution's expectations and be recognized or as an opportunity to broaden their perspective and acquire new skills through changes in the level of engagement and pursuing different roles, other nurses felt overwhelmed especially when the expected roles seemed more than they could handle²⁸⁾. From these reasons, one report pointed out that before assigning a role, the pros and cons of the assignment should be weighed, and appropriate support, such as recognizing an accomplishment in a way that motivates them, should be provided to the person taking the role²⁹⁾. Therefore, nurse administrators are expected to not only give appropriate evaluation and recognition, but also provide positive support so that mid-career generalist nurses will not feel burdened to take these roles, but realize it as an opportunity for self-development.

The association between professional factors and clinical nursing competence

In this study, more than 80% of the participating medical institutions engaged in nursing research as in-service education as well as research presentations in the hospital. The study results of mid-career generalist nurses also revealed that 80% of the respondents engaged in nursing research, and we found that clinical nursing competence was associated with 3 items: "engagement in nursing research," "research presentation in the hospital," and "research presentation at conferences." In the United States, mainly postdoctoral nurses engage in nursing research; however, it is a common practice in Japan for working nurses to engage in research which directly and positively affects the improvement of quality nursing care³⁰⁾. Because of this, hospitals that support such research activities as part of CE are committed to the development of nurses who

aspire to improve the quality of nursing services and the improvement on clinical competence of the nurses.

However, there is no evidence as of now that supports that such nursing research conducted as CE has contributed to the quality of clinical nursing in Japan. It seemed that nurses were not voluntarily engaging in research activities, instead, they felt that they were being forced to do so³¹⁾. Also, support environments such as enough time, resources, and environment to conduct literature searches, are not often adequately given³²⁾.

In order for mid-career generalist nurses to engage in research to improve their clinical competence, it is important to first establish support environments that meet both personnel and physical needs.

In this study, 54 out of 109 institutions (53.5%) indicated that “no in-service training is offered for nurses who passed 5 or more years after graduation.” After 5 years of practice in nursing, the difference in their level of clinical competence starts to become more apparent between individuals. This seems to be the reason why many institutions do not offer training for them because the diverse educational needs mean that the hospitals need to secure additional time, additional teaching personnel or training programs, making it difficult to provide appropriate in-service education³³⁾. In Survey 1, there were no significant differences in clinical nursing competence between the items such as the availability of training programs and available financial support for training. However, in Survey 2, significant differences were observed in clinical nursing competence between the following items: "participation in in-service training," "attendance at conferences," "participation in training outside the hospital," and "reading professional journals or publication." The results suggest that these factors affect clinical competence.

Our data showed that there were significant differences in clinical competence between the group

marked "I don't have any goals at the moment" and the groups marked "I want to get a certificate, or become a specialist, or become a nursing administrator". The results suggest that there may be an association between having career development goals and clinical nursing competence of mid-career generalist nurses. As motivating generalist nurses get special training to become more qualified nurses, the quality of nursing care would also improve. Therefore, nurse administrators should assess the career development needs of each individual mid-career nurse in a timely manner so that appropriate learning opportunities can be provided. And they should consider providing learning opportunities utilizing information technology which allows working professionals to learn without time or geographic constraints and to utilize all resources available.

Recommendation for future CE

There are two issues to note when considering future CE for mid-career nurses. First, there needs to be a program or an effort to increase clinical nursing competence for the groups with low clinical competence scores. Second, some reports indicated that in the course of development processes, when nurses are not motivated in their career development, their desire for self-development also decreases³⁴⁾, and that mid-career nurses tend to experience the plateau phenomenon in the course of the development process³⁵⁾. Therefore, it is important to strengthen our efforts to help improve clinical nursing competence of mid-career generalist nurses who are at plateau stage in their professional development.

Nurses constitute the largest group of health care professionals. This is a contributing factor that makes it more challenging for the nursing association to take measures similar to a CE point system or a

certification renewal program for specialists. As the society focuses on reducing healthcare costs, it may not be the right time to discuss the implementation of a license renewal system. However, establishing a training credit accreditation system may help prevent nurses from quitting and lead to a decreased turnover rate. It is hoped that a collaborative partnership will be developed between medical institutions or between a medical institution and a university to build a regional network of CE, rather than leaving the effort to the JNA. At the same time, establishing a training credit accreditation system should be considered to promote a structured CE system for generalist nurses.

Limitations of the study

Today, nurses' roles and employment opportunities have become more diverse, and many mid-career generalist nurses also work in various settings including home-care and social welfare facilities. In this study, however, only nurses who practice in medical institutions were included in the sample. The sample in this study represents the population to some extent; however, because it was taken from a specific geographic area, the fact that our data reflects geographic characteristics should be noted. Moreover, the study did not investigate whether or not the differences in hospital size or type would affect nursing clinical competence of mid-career generalist nurses.

Conclusions

1. The mean overall score of clinical nursing competence of mid-career generalist nurses was 73.1 ± 11.1 .

We found associations in all factors: institutional, 16/28 items; personal, 10/13 items; and professional, 13/14 items. We found a weak correlation between years of experience and clinical competence. Our data

suggested that professional factors have more impact on clinical nursing competence of mid-career generalist nurses rather than personal and institutional factors.

2. The associations were found between clinical nursing competence of mid-career generalist nurses and implementation and utilization of professional development systems. Nursing departments are expected to implement and utilize a combination of these systems. Meanwhile, mid-career generalist nurses themselves need to make an effort to utilize these tools effectively.
3. It was suggested that engaging in CE helps mid-career generalist nurses improve their clinical nursing competence. Therefore, nurse administrators should consider providing learning opportunities.

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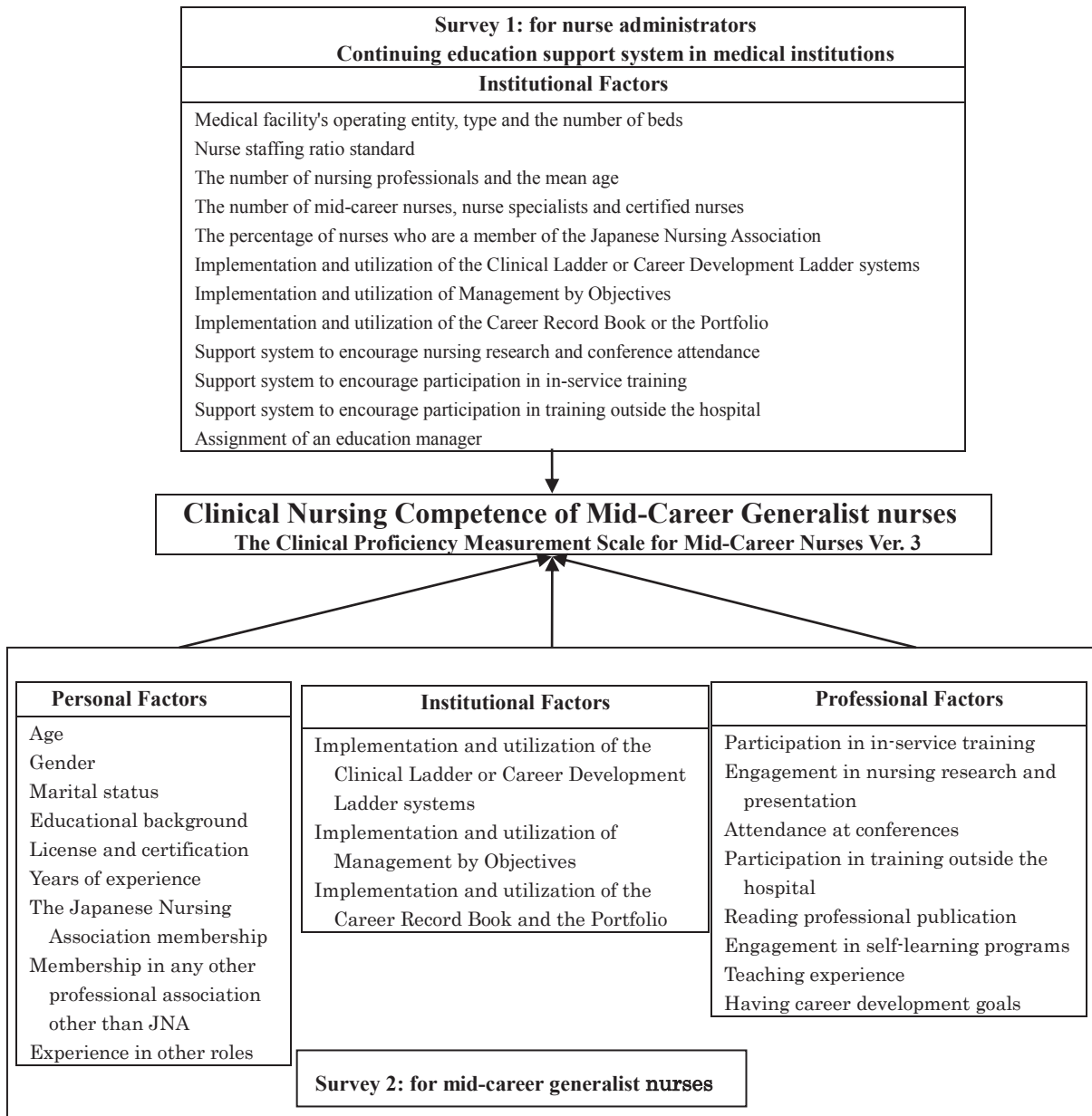


Figure 1. Conceptual Framework

Continuing nursing education by understanding the current continuing education support system in medical institutions (Survey 1) and identifying the relationships between clinical nursing competence of Mid-Career Generalist nurses and 3 factors (Survey 2).

Table 1. The results of clinical nursing competence measurement for mid-career generalist nurses

The Clinical Proficiency Measurement Scale for Mid-Career Nurses Ver. 3

N = 632

	Mean	SD	Cronbach α
I. Ability to contribute to development of the nursing team			
1.I can train nurses with less experience or colleagues	3.67	0.78	0.74
2.I think that others perceive me as a mid-career nurse	3.63	0.86	
3.Other staff come to me for an advice about patients	3.62	0.83	
4.When I assign a task to other nurses, I do so after determining competence of the nurses	3.82	0.71	
5.I can tell my managers (e.g. nurse manager or chief) my opinion about patient care even when their opinions are different from mine	3.60	0.86	
6.I identify operational problems and raise my concerns	3.59	0.79	
7.I can suggest specific measures to prevent incidents that potentially cause medical mishaps	3.70	0.71	
Average for each item	3.66	0.81	
II. Ability to provide quality care			
8.I have my own view on nursing that I want to share with younger nurses or colleagues	3.59	0.87	0.73
9.I engage in learning in pursuit of my ideal nursing	3.33	0.90	
10.I utilize new ideas and information flexibly	3.56	0.78	
11.I assess the care I provided to determine if it was satisfactory to the patient and their family	3.39	0.77	
12.In my clinical practice, I fine-tune the plan when appropriate to achieve nursing objectives	3.44	0.78	
13.I utilize expertise in my nursing practice to design the care provided	3.59	0.71	
14.When a patient's opinion differs from their doctor's, I negotiate with the doctor as the patient's advocate	3.54	0.78	
Average for each item	3.49	0.80	
III. Ability to encourage patient participation in medical care			
15.I set nursing goals after discussing with a patient and the family	3.03	0.89	0.51
16.I share my opinion regarding a patient's care plan and/or discharge plan with the doctor and/or other professionals and adjust the plan accordingly	3.40	0.89	
17.While I respect patients who wish to waive their right to information, I provide appropriate support so that they can face the truth	3.17	0.82	
Average for each item	3.20	0.88	
IV. Voluntary involvement in current circumstances			
18.I have a topic that I want to conduct research about	2.53	1.09	0.60
19.I voluntarily take roles in the unit	3.69	0.91	
20.I act based on workplace goals/objectives to help accomplish them	3.62	0.77	
21.I am proactive in improving workplace operations	3.55	0.84	
Average for each item	3.35	1.03	
Average of all the items	3.48	0.87	0.88

Note1 : 5-point Likert scale

Note2: The highest score is 5 points of each item

Table 2. Association between institutional factors and clinical nursing competence found by Survey 1

N = 109

Items	Groups	Frequency	%	Score of clinical nursing competence		
				Mean	SD	p-value
Operating entity	National hospital/National Hospital Organization/Laborers' hospital etc.	6	5.5	74.5	8.9	0.02*
	Prefecture/Municipalities/Regional administrative association	19	17.4	74.6	11.0	
	Public hospitals including Japanese Red Cross Society/Saiseikai/The National Federation of Agricultural Cooperatives for Health and Welfare	2	1.8	77.3	17.1	
	Social insurance related organizations	1	0.9	75.5	8.5	
	Public interest corporations	3	2.8	77.3	9.4	
	Medical corporations	66	60.6	71.3	11.5	
	Incorporated educational institution	2	1.8	78.3	10.8	
	Social welfare corporations	3	2.8	72.1	11.2	
	Companies such as JR/NTT	2	1.8	72.3	7.4	
	Sole proprietorship	1	0.9	78.0	NA	
Others	4	3.7	76.3	8.2		
Types	Advanced treatment hospital/regional medical care support hospital	12	11.0	74.4	10.1	0.008**
	General hospital (mainly general beds)	62	56.9	73.1	11.4	
	General hospital (mainly long-term care beds)	19	17.4	70.2	11.4	
	Psychiatric hospital	8	7.3	79.8	12.1	
	Others	8	7.3	74.2	9.6	
Approved number of beds	Less than 100	28	25.9	73.1	11.5	0.004**
	100 - 199	42	38.9	71.3	11.0	
	200 - 299	10	9.3	72.9	11.3	
	300 - 399	13	12.0	75.7	10.4	
	400 - 499	11	10.2	75.5	12.0	
	500 or more	5	4.6	74.1	7.2	
Nurse staffing ratio standard	7 to 1	38	34.9	72.2	11.4	0.78
	10 to 1	35	32.1	73.4	11.1	
	13 to 1	10	9.2	72.7	10.9	
	15 to 1	8	7.3	73.7	12.3	
	Others	17	15.6	78.6	14.5	
	No answer	1	0.9			
Number of nursing staff (except clerks and assistants)	Less than 50	19	17.4	71.4	12.1	0.16
	50 - 99	38	34.9	73.0	11.8	
	100 - 199	26	23.9	72.1	10.5	
	200 - 299	9	8.3	73.6	10.1	
	300 - 399	13	11.9	75.3	11.2	
	500 or more	4	3.7	78.4	8.3	
Mean age of nursing staff	Younger than 30	4	3.7	76.0	9.7	0.13
	30 - 34	18	16.5	74.4	10.5	
	35 - 39	31	28.4	73.8	10.8	
	40 - 44	33	30.3	72.0	11.5	
	45 or older	20	18.3	71.0	11.6	
	No answer	3	2.8			
Number of mid-career nurses	Less than 50	53	48.6	72.2	11.4	0.43
	50 - 99	28	25.7	72.3	11.2	
	100 - 199	15	13.8	73.3	11.0	
	200 - 299	6	5.5	74.3	9.7	
	300 or more	4	3.7	75.0	12.6	
	No answer	3	2.8			
Number of nurse specialists	None	91	83.5	72.5	11.2	0.04*
	1	9	8.3	74.7	11.2	
	2	3	2.8	74.8	11.8	
	3	1	0.9	78.4	8.2	
	4	3	2.8	78.4	7.8	
	5 or more	2	1.8	80.5	4.0	

Items	Groups	Frequency	%	Score of clinical nursing competence		
				Mean	SD	p-value
Number of certified nurses	None	55	50.5	72.3	10.9	0.02*
	1 or 2	27	24.8	72.0	11.8	
	3 - 5	11	10.1	75.1	11.2	
	6 - 9	10	9.2	76.3	10.0	
	10 - 15	3	2.8	71.8	10.3	
	15 or more	3	2.8	76.3	11.5	
The percentage of nurses who are a member of the Japanese Nursing Association	Less than 20%	9	8.3	72.2	11.4	0.33
	20 - 39%	15	13.8	82.8	13.7	
	40 - 59%	13	11.9	71.6	11.0	
	60 - 79%	21	19.3	73.4	8.9	
	80% or more	51	46.8	73.0	12.5	
In-service training for nurses who passed 5 or more years after graduation	Training is offered on a regular basis according to the level of clinical ladder	30	27.5	73.5	10.5	0.18
	Training is offered on a regular basis, but it's not by the level of clinical ladder	13	11.9	74.4	9.7	
	Training is offered on an irregular basis	11	10.1	74.9	11.0	
	No training is offered	54	49.5	72.2	11.9	
	No answer	1	0.9			
Engagement in nursing research as part of in-service education	Yes	91	83.5	73.5	10.7	0.02*
	No	18	16.5	70.5	13.4	
Research presentation in the hospital	Yes	93	85.3	73.1	11.0	0.82
	No	16	14.7	72.8	12.2	
Presentation at Conferences	Yes	79	72.5	73.8	11.0	0.01*
	No	30	27.5	70.5	11.4	
Support system to encourage conference attendance	Considered as business trip only for presenters	19	17.4	74.7	11.9	0.17
	Considered as business trip only for presenters and co-researchers	16	14.7	73.5	11.8	
	Considered as business trip including for attendees who are not presenters or co-researchers	54	49.5	72.1	11.9	
	Others	14	12.8	73.6	10.8	
	No answer	6	5.5			
Support system to encourage participation in training organized by JNA	There is no set number of participants, and considered as business trip when possible	35	32.1	72.5	12.1	0.43
	There is a set number of participants, and considered as business trip when possible	54	49.5	72.8	10.8	
	Attend at my own expense	5	4.6	74.3	8.4	
	Others	14	12.8	75.1	11.5	
	No answer	1	0.9			
Support system to encourage participation in training that is not organized by JNA	There is no set number of participants, and considered as business trip when possible	27	24.8	72.8	11.8	0.38
	There is a set number of participants, and considered as business trip when possible	54	49.5	73.0	11.1	
	Attend at my own expense	13	11.9	72.2	10.4	
	Others	15	13.8			
Assignment of an education/training manager in nursing department	Assignment of a full-time manager working exclusively for education/training purpose	16	14.7	73.9	11.3	0.22
	Assignment of a full-time manager, but not working exclusively for education/training purpose	15	13.8	74.6	11.4	
	Assignment of a manager who also take other roles	58	53.2	72.6	11.4	
	Assignment of multiple personnel in charge	4	3.7	73.9	10.0	
	No assignment	16	14.7	70.3	10.0	

*p < 0.05 **p < 0.01

T-test for two groups in an item

One-way test analysis of variance for an item with 3 groups or more

Table 3. Association between institutional factors and clinical nursing competence found by Survey 2

N = 632

Items	Groups	Frequency	%	Score of clinical nursing competence		
				Mean	SD	p-value
Clinical Ladder or Career Ladder systems	Implemented	384	60.8	74.6	10.9	0.0001***
	Not implemented	163	25.8	71.4	11.5	
	Don't know about the system	79	12.5	69.8	10.2	
	No answer	6	0.9			
My ladder level	Know my ladder level	303	78.9	75.4	10.6	0.000***
	Don't know my ladder level	69	18.0	69.0	11.6	
	No answer	12	3.1			
Evaluation of the ladder level	Being conducted regularly	242	63.0	75.6	11.2	0.03*
	Being conducted irregularly	46	12.0	73.6	12.4	
	Not being conducted	46	12.0	73.3	9.4	
	Not sure if it is being conducted	50	13.0	70.8	9.5	
Utilization of the Ladder system	Being utilized	135	35.2	77.3	11.1	0.0005***
	Not being utilized	244	63.5	73.3	10.3	
	No answer	5	1.3			
Management by Objectives	Implemented	441	69.8	74.5	10.8	0.000***
	Not implemented	66	10.4	70.1	11.8	
	Don't know about the system	117	18.5	69.5	11.0	
	No answer	8	1.3			
Management by Objectives interview	Being conducted regularly	400	90.7	74.8	10.7	0.38
	Being conducted irregularly	28	6.3	72.3	11.1	
	Not being conducted	10	2.3	73.7	11.3	
	Not sure if it is being conducted	8	1.8	69.9	8.7	
Utilization of Management by Objectives	Being utilized	283	64.2	76.4	10.6	0.000***
	Not being utilized	147	33.3	71.2	10.2	
	No answer	11	2.5			
The Career Record Book/Portfolio	Have one	246	38.9	75.0	10.1	0.002**
	Don't have one	251	39.7	72.2	11.9	
	Don't know about the system	123	19.5	71.3	10.7	
	No answer	12	1.9			
Utilization of the Career Record Book/Portfolio	Being utilized	57	23.2	78.0	10.7	0.005**
	Not being utilized	189	76.8	73.7	9.9	
In-service training for nurses who passed 5 or more years after graduation	Training is offered on a regular basis according to the level of clinical ladder	158	25.0	74.8	11.1	0.000***
	Training is offered on a regular basis, but it's not by the level of clinical ladder	37	5.9	74.6	10.4	
	Training is offered on an irregular basis	66	10.4	74.9	8.9	
	No training is offered	259	41.0	73.3	11.0	
	Don't know if there is such training	93	14.7	68.0	11.0	
	No answer	19	3.0			

*p < 0.05 **p < 0.01 ***p < 0.001

T-test for two groups in an item

One-way test analysis of variance for an item with 3 groups or more

Note 1: As missing data are excluded, it may not add up to N = 632.

Note 2: Only those who answered that the professional development system has been implemented are answering sub-questions.

Table 4. Association between personal factors and clinical nursing competence found by Survey 2

N = 632						
Items	Groups	Frequency	%	Score of clinical nursing competence		
				Mean	SD	p-value
Age	Younger than 30	82	13.0	71.6	11.0	0.003**
	30 - 34	156	24.7	73.9	11.0	
	35 - 39	142	22.5	73.0	10.6	
	40 - 44	113	17.9	77.5	19.3	
	45 or older	138	21.8	79.4	11.0	
	No answer	1	0.2			
Gender	Female	596	94.3	73.1	11.1	0.88
	Male	36	5.7	73.4	11.7	
Marital status	Unmarried	251	39.7	72.0	11.1	0.04*
	Married	377	59.7	73.8	11.3	
	No answer	4	0.6			
Highest level of education completed	2-year vocational school	99	15.7	73.2	12.0	0.69
	3-year vocational school	380	60.1	72.8	11.2	
	Nursing course	61	9.7	74.0	9.1	
	Junior college	49	7.8	72.2	11.0	
	Nursing college (including transferred students)	31	4.9	74.0	11.7	
	Master's program in Graduate school	2	0.3	82.0	7.9	
	Others (e.g. public health nurses, midwives)	7	1.1	75.5	6.4	
No answer	3	0.5				
License and Certificate (multiple responses)	Nurse	627	99.2	73.1	11.1	0.46
	Public nurse	32	5.1	75.2	10.5	0.27
	Midwife	21	3.3	74.5	10.8	0.55
	Others	33	5.2	80.7	10.7	0.000***
Years of experience	Less than 5 years	28	4.4	69.6	14.0	0.001**
	6 - 9	235	37.2	71.6	11.0	
	10 - 15	166	26.3	73.3	9.7	
	16 - 20	108	17.1	74.0	13.1	
	21 years or longer	90	14.2	77.0	10.1	
	No answer	5	0.8			
Member of the Japanese Nursing Association	Yes	522	82.6	73.4	11.1	0.12
	No	110	17.4	71.6	11.1	
Membership in other associations other than JNA	Yes	97	15.3	79.4	10.9	0.000***
	No	518	82.0	71.9	10.8	
	No answer	17	2.7			
Experience in teaching novice nurses as a preceptor	Yes	535	84.7	73.8	10.7	0.000***
	No	95	15.0	68.9	12.5	
	No answer	2	0.3			
Experience in supervising practicum	Yes	319	50.5	75.2	11.0	0.000***
	No	309	48.9	70.9	10.9	
	No answer	4	0.6			
Experience in being in charge of the nursing unit	Yes	581	91.9	73.7	11.3	0.000***
	No	45	7.1	65.2	10.9	
	No answer	6	0.9			
Experience as a committee member of nursing department	Yes	536	84.8	74.1	10.5	0.000***
	No	94	14.9	67.3	12.8	
	No answer	2	0.3			
Experience as a hospital committee member	Yes	337	53.3	74.7	11.0	0.000***
	No	284	44.9	71.1	11.1	
	No answer	11	1.7			

*p < 0.05 **p < 0.01 ***p < 0.001

T-test for two groups in an item

One-way test analysis of variance for an item with 3 groups or more

Note 1: As missing data are excluded, it may not add up to N = 632.

Note 2: For the question regarding licenses and certifications permitted multiple responses, significant difference was calculated between the group that selected the item and the group that did not.

Table 5. Association between professional factors and clinical nursing competence found by Survey 2

N = 632

Items	Groups	Frequency	%	Score of clinical nursing competence		
				Mean	SD	p-value
Number of in-service training participated in a year	None	197	31.2	67.4	13.0	0.000***
	1 - 5	182	28.8	72.1	10.9	
	6 - 10	122	19.3	74.7	10.3	
	11 - 15	75	11.9	78.5	9.2	
	More than 15	51	8.1	78.9	9.3	
	No answer	5	0.8			
Difficulty in participating in in-service training	Some difficulty	290	45.9	72.6	10.9	0.12
	No difficulty	336	53.2	73.9	10.8	
	No answer	6	0.9			
Engagement in nursing research	Have engaged in research	503	79.6	73.6	10.9	0.02*
	Have never engaged in research	95	15.0	70.6	11.5	
	No answer	34	5.4			
Research presentation in the hospital	Have given a presentation	433	68.5	74.4	10.7	0.000***
	Have never given a presentation	179	28.3	69.9	11.5	
	No answer	20	3.2			
Presentation at conferences (outside the hospital)	Have given a presentation	215	34.0	76.4	10.3	0.000***
	Have never given a presentation	404	63.9	71.4	11.1	
	No answer	13	2.1			
Attendance at conferences	Participate almost every year	88	13.9	78.9	10.6	0.000***
	Have attended several times in the past	358	56.6	74.1	10.6	
	Have never attended	178	28.2	68.4	10.3	
	Others	6	0.9	71.5	7.7	
	No answer	2	0.3			
Participation in training organized by JNA	Participate almost every year	109	17.2	78.0	8.9	0.000***
	Have participated several times in the past	433	68.5	72.8	11.0	
	Have never participated	84	13.3	68.8	11.5	
	Others	4	0.6	65.0	3.6	
	No answer	2	0.3			
Participation in training that is not organized by JNA	Participate almost every year	206	32.6	75.8	11.1	0.000***
	Have participated several times in the past	365	57.8	72.4	10.7	
	Have never participated	56	8.9	68.8	11.4	
	Others	3	0.5	70.0	7.0	
	No answer	2	0.3			
Difficulty in participating in training outside the hospital	Some difficulty	356	56.3	72.2	11.2	0.02*
	No difficulty	271	42.9	74.2	10.6	
	No answer	5	0.8			
Reading monthly professional journals throughout the year	Almost every month	75	11.9	77.8	11.3	0.000***
	Sometimes	337	53.3	74.3	10.7	
	Rarely	217	34.3	69.6	10.4	
	Others	2	0.3	84.5	7.8	
	No answer	1	0.2			
Reading professional publication other than journals throughout the year	Almost every month	35	5.5	82.1	10.6	0.000***
	Sometimes	376	59.5	74.5	10.3	
	Rarely	218	34.5	69.3	10.9	
	Others	2	0.3	85.5	6.4	
	No answer	1	0.2			
Self-learning activities other than participation in training/research or reading publication	Yes	135	21.4	77.5	9.9	0.000***
	No	489	77.4	71.9	11.0	
	No answer	8	1.3			
Experience as an instructor for in-service training or training outside the hospital	Have been an instructor for in-service training	164	25.9	77.2	10.2	0.000***
	Have been an instructor for training outside the hospital	20	3.2	73.9	9.9	
	Have been an instructor for both in-service training and training outside the hospital	21	3.3	83.1	11.7	
	Have no experience as an instructor	426	67.4	71.1	11.0	
	No answer	1	0.2			

Career development goals (multiple responses)	Want to get a certification	78	12.3	77.7	11.1	0.000***
	Want to become a certified nurse	70	11.1	75.0	10.0	0.12
	Want to become a nurse specialist	30	4.7	78.1	8.5	0.01*
	Want to become a nurse administrator	22	3.5	81.1	7.1	0.0005**
	Want to become a nursing professor	13	2.1	78.9	7.6	0.05
	Want to go to college	26	4.1	78.4	9.5	0.01*
	Want to go to graduate school	13	2.1	79.9	7.1	0.02*
	Don't have any goals at the moment	424	67.1	71.3	11.2	0.000***
	Others	16	2.5	74.4	13.9	0.61
	No answer	11	1.7			

p < 0.05 **p < 0.01 ***p < 0.001

T-test for two groups in an item

One-way test analysis of variance for an item with 3 groups or more

Note 1: As missing data are excluded, it may not add up to N = 632.

Note 2: For the question regarding career development goals permitted multiple responses, significant difference was calculated between the group that selected the item and the group that did not.