

# Demand and Supply for Nursing Competencies in Taiwan's Hospital Industry

## Executive Summary

- ▶ The author provides an approach for schools of nursing to conceptualize the development of educational programs in the context of market demands for competency.
- ▶ Similarly, health care organizations can consider their existing and future supply of staff to meet the demands of their patient populations through focused recruitment and staff development.
- ▶ Hospitals' perceptions of their demand for nursing competency was compared with that of current staff nurses' perception of the demand for competency as well as with their own competency.
- ▶ Study variables included various types of health care institutions from medical centers to local nonteaching hospitals.
- ▶ Competency variables (21) included basic, intermediate, and advanced patient care/supervision skills.
- ▶ Of the five competencies that were rated as high in demand and sufficient in supply, four were from the basic-level competency group (technical skill, independence, communication, and professionalism) and one was from the intermediate level, self-coping group.

**I**N 2002, the National Union of Nurses' Association, Republic of China, Taiwan (The National Union of Nurses' Association, R.O.C., 2002), issued a report describing Taiwan's nursing workforce as being in oversupply, with those nurses in the workforce as having uneven nursing skills. This state was most probably due to a lack of long-term and nationwide planning as well as followup mechanisms for the nursing workforce by the Taiwan Ministry of Education. As of June 2002, there were 162,153 registered or licensed nurses in Taiwan, with 92,051 of them currently practicing. Since 2000, the nurse turnover rate has dropped noticeably due to the changes in Taiwan's economic environment. To continuously improve the quality of nursing services, lifelong learning (for example, on-the-job training and pursuing a bachelor's or higher university degree) has been encouraged and emphasized. However, in such a cost-containment environment, hospitals have limited resources and offer few opportunities for improving nurses' competencies. Under these circumstances, rather than analyze the types of nurses (for example, educational background) entering the workforce and shortages of nurses in certain types

of facilities (Mailey et al., 2000), it is important to investigate the demand and supply for specific nursing competencies in currently employed nurses.

Along with the increasing complexity of nursing services, hospital employers are demanding qualified and competent nurses to provide high-quality clinical care. Nursing education in the United States and elsewhere, however, tends not to reflect rapidly changing demands in the hospital nursing environment into the nursing school teaching curriculum. This deficiency results in new graduates having difficulties coping in their new positions, and related addi-

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*HUEY-MING TZENG, PhD, RN*, is an Associate Professor, I-Shou University, Nursing Department, Kaohsiung County, Taiwan; she is a Graduate of the University of Michigan, Ann Arbor, MI.

*EDITOR'S NOTE:* This article represents the first in an occasional series of articles designed to provide nurse leaders with an international perspective of key nursing issues and trends. While these reports may not be directly applicable to U.S. institutions, they nevertheless provide a world-view for advancing nursing leadership and nursing's impact on health care cost and quality outcomes.

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tional costs in human resource management and on-the-job training for hospitals. Together this leads to diminished quality of nursing care (Western, 1994). Mailey and colleagues (2000) investigated the employment and educational needs for nurses in the United States, and found that there were mismatches between the types of educational preparation of nurses entering the workforce and the skills demanded for the nursing job vacancies across different types of hospital facilities. Cleary, Lacey, and Beck-Warden (1998) suggested that workforce planning should not only involve the right nursing competencies, but employers should identify the preferred skills they want their future nurses to bring to their hospitals.

In Taiwan's nursing environment, the quantity of nurses supplied (including the number of qualified registered nurses actively working in nursing, the number actively seeking jobs in the nursing profession, and the students in school nursing programs) currently exceeds the demand (the total number of currently available jobs) for registered nurses. Taiwanese researchers also expressed that disparities continue to exist in the demand for competent nurses by employers and the supply produced by nursing educators, which requires attention (Chen et al., 1998). Mailey and colleagues (2000) described the point of equilibrium in the nursing market as follows: if the quantity of nurses supplied exceeds the demand, unemployment occurs. Under such circumstances, the job market becomes sluggish, which could result in deterioration in working conditions and fewer trained professionals willing to work as nurses until equilibrium is restored.

In the present study, the demand for nursing competencies was defined as hospital employers' perceptions on the extent to which the identified 21 nursing skills are desired for nurses in Taiwan's hospital industry. *Demand* represents

desired levels of services to generate optimal nurse-sensitive patient outcomes. Nurses' perceptions of their jobs' demand for nursing competencies was conceptualized as nurses' demand for nursing competencies. Nurses' self-evaluation of their own competencies was conceptualized as the supply for nursing competencies. The purpose of this descriptive study was to investigate the differences between the demand and supply for nursing competencies across different types of hospitals in Taiwan's hospital industry. The value of this study to nursing administrators might involve improving resource planning by identifying areas of expected growth and changes. This research provides information that can be used by the educational sector as well as hospital training programs to better prepare nurses for current job demands in today's job market in Taiwan.

#### *Demand and Supply for Nursing Competencies*

Nursing competence is defined as personal skills developed through professional nurse training courses and is considered to be an outcome of these courses. Competencies, which may change when the environment changes, comprise a group of broad abilities and practical skills. Thus, competence is considered an individual characteristic (Archibald & Bainbridge, 1994; DeBack & Mentkowski, 1986). Past studies often classified nursing skills into the following dimensions: patient care/nursing process, interpersonal relationship, teamwork, communication, planning and evaluation, teaching and coordination, professional development, research, and management/leadership (Buckenham, 1988; Chen, Bye, & Gwo, 1993; Ellis & Hartley, 1995; Hsu et al., 1994; Lu, Chen, & Wang, 1998; Pai, Hsu, & Wang, 1999; Schwirian, 1978; Yu & Ma, 1992). Interpersonal skills/emotional intelligence, inter-professional (medicine and nursing)

communication, cultural competency, and integrating skills within the context of holistic patient care have been valued and listed as priorities in nursing performance improvement (Carberry, 1998; Freeth & Nicol, 1998; Muller-Smith, 1999; Salimbene, 1999). In a study of hospital employees in North Carolina, Cleary and associates (1998) identified 21 skills that employers desired in hospital nursing personnel and found that these hospital employers expressed an urgent demand for their future nursing labor force to have the competencies of critical thinking, leadership, flexibility, and resource management.

In hospitals, professional standards serve as the infrastructure undergirding the development of institutional standards of patient care, competency-based education courses, and quality assurance programs within integrated health care delivery systems (Dozier, 1998). In Taiwan, professional standards have been well developed; since 1982 the competency-based nursing clinical ladder system has been popularly implemented in more than 100 hospitals. Hospitals usually implement the following four-level clinical ladder system: N1 (the entry level; to perform general patient care); N2 (to participate in critical patient care); N3 (to execute integrated nursing care and be responsible for clinical teaching activities); and N4 (to function as nursing administrator and assist in research/survey activities) (Kaohsiung Veterans General Hospital, 2000; Pai et al., 1999).

Hagerty (1992) suggested that liberal nursing education should emphasize the following types of knowledge: professional knowledge, professional skills, implementing the nursing process, contextual practice, analytical practice, aesthetic practice, leadership, and professional development. Several studies indicated that the orientation of nursing education has shifted from an information-driven environment to a process of teach-

ing critical thinking and clinical judgment skills as a fundamental and integral component of professional nursing practice (Angel, Duffey, & Belyea, 2000; Bechtel, Davidhizar, & Bradshaw, 1999; Boblin-Cummings, Baumann, & Deber, 1999; Tan, 2000; Thompson & Rebesch, 1999). Brzytwa, Copeland, and Hewson (2000) examined nurse employers' and educators' perceptions of deficiencies and the importance of enhancing nursing education related to specific managed care competencies. Both employers and educators perceived the practice-of-nursing competencies as being the most important and least deficient, and the business-of-nursing competencies as being the most deficient and least important for enhancing nursing education. Diede McNish, and Coose (2000) concluded that the two highest-ranked competencies for the performance of associate degree-prepared nurses during the first 6 months following their graduation were effective oral and written communication and personal attributes such as flexibility and open-mindedness; the areas that needed to be improved were communication skills and professional accountability.

Pai et al.'s (1999) study in a Taiwan medical center found that nurses rated their areas of greatest competency as being patient care, followed by overall nursing care, communication, teaching, management, self and professional growth, and research skills.

In summary, these studies demonstrate that health care employers demand both the practice and business of nursing competencies; yet, the expected levels of these competencies have seldom been investigated in depth. In addition, the supply for nursing competencies has seldom been investigated. In other words, limited research has focused on illustrating the demand and supply for nursing competencies.

### Research Question

The purpose of this study was to investigate the differences among hospital employers' perceptions of the demands for nursing skills for their staff nurses, currently employed nurses' ratings of job demands, and their own self-assessments of the adequacy of their skills to supply these demands in Taiwan's hospital industry. The main research question was: What are the differences among the demand and supply for nursing competencies in Taiwan's hospital industry by type of hospital accreditation? The type of hospital accreditation was the unit of analysis; these included medical center, regional hospital, local teaching hospital, and local non-teaching hospital.

### Definitions

*Nursing employers* (for example, directors, associate directors, supervisors, head nurses, and assistant head nurses) were administrators who managed human resources-related issues in nursing staff. *Nurse employees* referred to those nurses who had graduated from a nationally accredited nursing program and who held a professional license as a registered nurse (equivalent to a RN in the United States) or as a practical nurse (equivalent to a LPN in the United States). In Taiwan, there is no difference in the responsibilities of registered and practical nurses; their main duty is to provide direct clinical patient care. When hiring nurses, nurse administrators usually consider nurses' professional experience, educational background, and licensure. In most Taiwanese hospitals, tenure and licensure (registered nurse versus practical nurse) have the most relationship to nurses' salary rank.

The 21 *nursing competencies* included in this study were based upon the research findings of Cleary and associates (1998) as well as previously reviewed literature. These competencies were

clustered into three groups: (a) basic-level patient care skills (general professional technical skills, general clinical skills, assessment skills, ability to work independently, critical thinking/problem solving, professional orientation, health care system knowledge); (b) intermediate-level patient care and fundamental management skills (written/verbal communication, interpersonal communication, case management, resource management, team building/teamwork, leadership, delegation, flexibility, staff coping skills); and (c) advanced-level patient care and supervision skills (complex professional technical skills, specific clinical skills, long-term care/geriatric skills, multiple skills, ability to supervise).

### Research Methodology

This study used a cross-sectional survey design and quantitative approach. The data collection periods were from May to July 2001 for hospital employers and from November 2001 to February 2002 for nurse employees. Subjects' participation was voluntary and an informed consent form was included in the first section of the questionnaire.

### Subjects

The *nurse employer population* was the nursing directors from 209 hospitals (11 medical centers, 45 regional hospitals, 24 local teaching hospitals, and 129 local nonteaching hospitals). For the year 2000, the Taiwan Joint Commission on Hospital Accreditation accredited these hospitals either as medical centers, regional hospitals, local teaching hospitals, or local nonteaching hospitals. The questionnaire packages were sent to the attention of the nursing director and included a pre-addressed and stamped return envelope. A followup letter was sent 1 month later to those nurse administrators who had not responded in order to increase the response rate.

The overall response rate was

40.2% (N=84), which included 6 medical centers, 21 regional hospitals, 20 local teaching hospitals, and 37 local nonteaching hospitals. On the types of funding reported for these hospitals, 12 were public/civil hospitals, 6 were military, 3 were university, 18 were owned by foundations, and 45 were privately owned. All these institutions offered both outpatient and inpatient services, 23 delivered chronic inpatient services for nonpsychiatric patients, 23 offered chronic inpatient services for psychiatric patients, 30 provided nursing home services, 28 had day hospitals, 7 had postpartum services, and 47 institutions provided home care services. It is noted that day hospitals in Taiwan provide services for chronic psychiatric patients and occupational rehabilitation. Of these respondents, 53 were nursing directors, 2 were associate directors, 13 were supervisors, and 11 were unit head nurses. Among them, 2 had graduated from occupational high schools, 27 from junior colleges, 31 from 4-year university nursing schools, and 16 held a master's degree or higher. Overall, there were 212 nurses per hospital on average; the average number of nurses by different types of hospital was: medical centers (mean=1,254), regional hospitals (mean=369), local teaching hospitals (mean= 32), and local nonteaching hospitals (mean=38).

*Nurse employee* subjects were randomly selected from the member roster of the Kaohsiung Nurse Association (a total of 7,805 members). Questionnaire packets with pre-addressed and stamped return envelopes were mailed to the home addresses of 800 nurses who worked in hospitals. A total of 243 questionnaires were returned for an overall response rate of 30.4%. Of these respondents, 242 were female and 1 was male. A total of 211 were clinical nurses; 18 were head nurses/assistant head nurses, nursing directors/associate nursing directors, or supervisors; 13 subjects did not answer the question-

naires (returned the questionnaire unanswered). Of the respondents, 16 had graduated from occupational high schools, 183 from junior colleges, 39 held a bachelor's degree, and 4 held a master's degree or higher. There were 113 subjects who worked in medical centers, 39 in regional hospitals, 41 in local teaching hospitals, and 49 in local nonteaching hospitals. The average age of these nurses was 31.07 years (SD=7.23; range from 20 to 56 years). The average tenure was 7.20 years (SD=6.07; range from 0 to 30 years), and the average professional experience was 9.21 years (SD=6.72; range from 29 to 30 years).

### Measurement Instruments

For *nurse employers*, the Questionnaire for Surveying Nurse Work Force and Desired Nursing Competencies contained a hospital demographic sheet, a nurse personnel information form, the desired levels of the 21 nurse competency items (21 items), general satisfaction indicators with the nursing competencies of currently employed nurses (7 items), and skill areas that needed to be improved for the currently employed nurses (6 items). Only nursing competency items were used in this study. Nurse employers were asked to rate the extent of their jobs' demands for these nursing competencies (as the demand of nursing competencies as perceived by nurse employees) on a five-point Likert scale (1=never required, 2=not required, 3=neutral, 4=required, 5=extremely required). These items were operationalized in the Questionnaire for Surveying Nurse Work Force and Desired Nursing Competencies. Tests of content validity and jury opinion were performed. Factor analysis was used to determine how these identified skills were grouped. The three-factor solution was chosen as the best solution according to the Scree plot and the Eigenvalues. The extraction method was Principal Component

analysis; Varimax rotation with Kaiser normalization was employed. The first factor included seven basic-level patient care skill items (Cronbach's alpha coefficient = 0.872, 7 items), the second factor comprised nine intermediate-level patient care or fundamental management skills (Cronbach's alpha coefficient = 0.855, 9 items), and the third factor comprised five advanced-level patient care or supervision skills (Cronbach's alpha coefficient = 0.773, 5 items). The Cronbach's alpha coefficient for all 21 nursing competency items together was 0.895.

For *nurse employees*, the Questionnaire for Surveying Nurse Work Force contained a demographic sheet, the nurse competency items (21 items for self-assessment of nurses' own abilities and another 21 items for their jobs' demands for nursing competencies), and several general items. Nurse subjects were asked to rate the extent of their own ability on each individual nursing competency (as the supply of nursing competencies) on a five-point Likert scale (1=need to strengthen very much, 2=need to strengthen part of the ability, 3=neutral, 4=mostly equipped, 5=completely equipped). All these items for nurse employees were operationalized in the Questionnaire for Surveying Nurse Work Force. Tests of content validity and jury opinion were performed. Utilizing employers' perceptions on the typology of nursing competencies, results of reliability testing (using Cronbach's alpha coefficients) were: self-assessment/basic-level patient care skills (Cronbach's alpha coefficient = .895, 7 items); self-assessment/intermediate-level patient care and fundamental management skills (Cronbach's alpha coefficient = .885, 9 items); self-assessment/advanced-level patient care and supervision skills (Cronbach's alpha coefficient = .761, 5 items); self-assessment, 21 items together (Cronbach's alpha coefficient = .928); job demands/basic-level patient care skills

**Table 1.**  
**Comparison Between the Demand and Supply for Nursing Competencies:**  
**Descriptive Information for the Three Competency Groups**

Variable	Demand (Employers)		Demand (Employees)		Supply (Employees' Self-Assessment)	
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
<b>Competency Group 1: Basic-Level Patient Care Skills</b>						
Medical center	5.00	.00	4.01	.69	3.66	.68
Regional hospital	4.70	.30	4.04	.72	3.63	.64
Local teaching hospital	4.71	.32	4.20	.51	3.60	.70
Local nonteaching hospital	4.60	.46	3.96	.64	3.48	.64
<b>Competency Group 2: Intermediate-Level Patient Care or Fundamental Management Skills</b>						
Medical center	4.81	.23	3.81	.63	3.32	.66
Regional hospital	4.24	.46	3.82	.62	3.28	.68
Local teaching hospital	4.42	.29	3.81	.42	3.32	.70
Local nonteaching hospital	4.20	.40	3.69	.64	3.29	.65
<b>Competency Group 3: Advanced-Level Patient Care or Supervision Skills</b>						
Medical center	4.70	.33	3.64	.68	2.98	.81
Regional hospital	4.11	.46	3.56	.74	2.95	.65
Local teaching hospital	4.19	.34	3.52	.64	2.77	.85
Local nonteaching hospital	3.92	.52	3.40	.83	2.62	.79

(Cronbach's alpha coefficient = .911, 7 items); job demands/intermediate-level patient care and fundamental management skills (Cronbach's alpha coefficient = .858, 9 items); job demands/advanced-level patient care and supervision skills (Cronbach's alpha coefficient = .750, 5 items); and job demands, 21 items together (Cronbach's alpha coefficient = .919).

### Analyses

Data were entered and processed using SPSS 8.0 statistics software and Microsoft Excel version 2000. Both employer and employee datasets were aggregated into four hospital accreditation levels (medical center, regional hospital, local-teaching hospital, and local nonteaching hospital), and mean values were calculated. Descriptive analyses were conducted and line charts were drawn to compare the differences in levels between the demand and supply for nursing competencies across different types of hospitals.

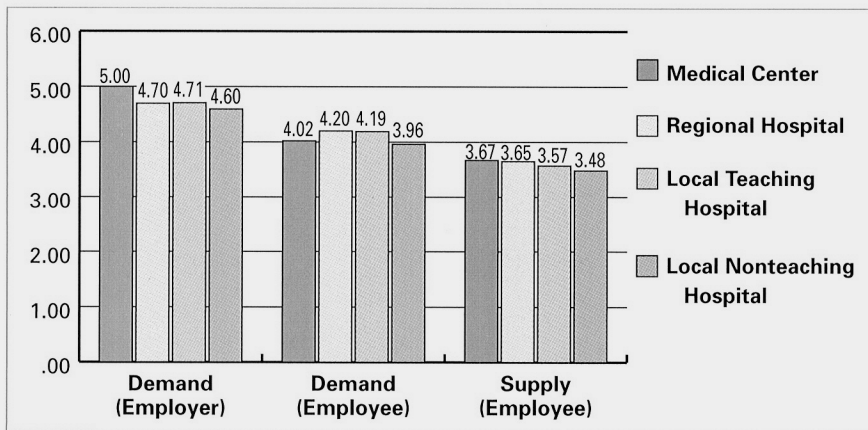
### Findings

Descriptive information for three competency factors is shown in Table 1. Figures 1, 2, and 3 compare the mean values by each competency group across the four types of hospital accreditation. Overall, medical centers had the highest level of demand for all three competency factors. For all three competency groups, the patterns of nurses' self-assessment across the four types of hospitals were similar; the medical centers' value was the highest, followed by regional hospitals, local teaching hospitals, and local nonteaching hospitals. As shown in Figure 1 for competency group 1: basic-level patient care skills, employees' perceptions on their jobs' demand for nursing competencies were lower than employers' perspectives. The levels of employees' self-assessment on their professional capability were relatively lower than the mean values of demand. However, the reasons that employees working for medical centers or local nonteaching hospitals expressed that their jobs required less on the first competency group were not clear.

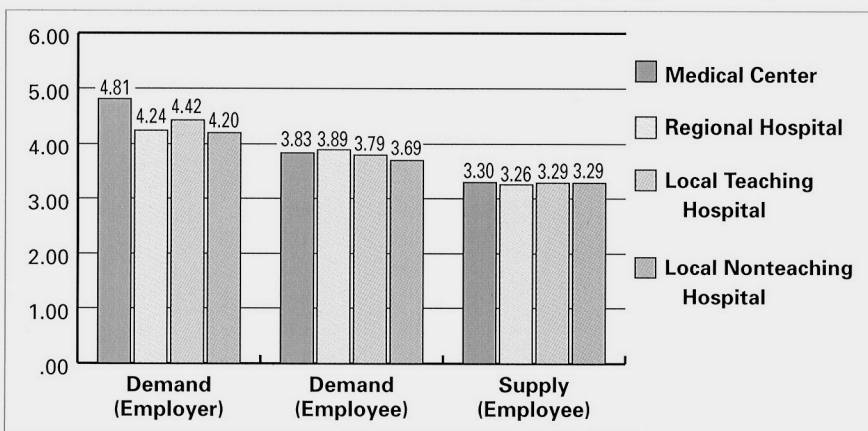
As indicated in Figure 2 for competency group 2: intermediate-level patient care or fundamental management skills, employees' perceptions of their jobs' demand for these nursing competencies again was lower than employers' perspectives. Moreover, the average level of the local teaching hospital employers' perceptions of the demand for competency group 2 was relatively higher than those of regional hospital employers. The levels of employees' self-assessment on these nursing competencies were comparable across different types of hospitals and relatively lower than the mean values of job demand.

For competency group 3: advanced-level patient care or supervision skills, Figure 3 shows that the average level of the local teaching hospital employers' perceptions of the demand for competency group 3 was lower than those of medical center employers, but relatively higher than that of the regional and local nonteaching hospitals. In contrast, the average level of the regional hospital employees' perceptions of the job

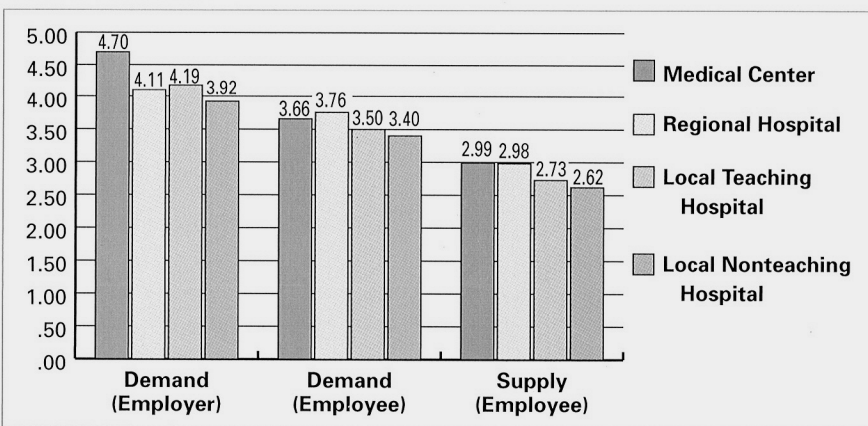
**Figure 1.**  
**Bar Chart for Competency Group 1: Basic-Level Patient Care Skills, Mean Value by Employer Demand, Employee Demand, and Employee Supply, by Type of Hospital**



**Figure 2.**  
**Bar Chart for Competency Group 2: Intermediate-Level Patient Care or Fundamental Management Skills, Mean Value by Employer Demand, Employee Demand, and Employee Supply, by Type of Hospital**



**Figure 3.**  
**Bar Chart for Competency Group 3: Advanced-Level Patient Care or Supervision Skills, Mean Value by Employer Demand, Employee Demand, and Employee Supply, by Type of Hospital**



demand of these job demands was relatively higher than for the other three types of hospitals. Similar to competency groups 1 and 2, the levels of employees' self-assessment on these nursing competencies were relatively lower than the mean values of job demand.

Table 2 shows the comparisons between the demand and supply for nursing competencies for all 21 nursing skills. The mean values of these skills were ranked within each hospital type. In comparing the rankings between the demand and supply of the 21 nursing competencies, the following competencies were rated as having a relatively high demand as well as being sufficiently supplied: general professional technical skill (competency 1); ability to work independently (competency 8); interpersonal communication (competency 11); professional orientation (competency 12); and self-coping skill (competency 21). Both employers and employees rated assessment skill (competency 7) and critical thinking and problem solving (competency 9) as being in relatively high demand. The competency of general clinical skills (competency 1) also was rated as being in relatively high demand (as perceived by employers) and in sufficient supply (as perceived by employees). The competency of team building and teamwork (competency 16) was rated as being in more demand by these nurse employees who also indicated they were well equipped in this area. The competency of flexibility (competency 19) also was perceived by these nurses as being in relatively sufficient supply.

#### Discussion

This study described the differences among hospital employers' perceptions of demands for specific nursing skills (the demand side as perceived by hospital employers), currently employed nurses' perceptions of their job demands for these skills (the demand side as perceived by nurses), and nurses'

**Table 2.**  
**Comparison Between the Demand and Supply for Nursing Competencies:**  
**Descriptive Information on 21 Nursing Skills**

Variable  Type of Hospital	Demand (Employers)			Demand (Employees)			Supply (Employees' Self-Assessment)		
	Mean	Standard Deviation	Rank*	Mean	Standard Deviation	Rank	Mean	Standard Deviation	Rank
<b>Competency 1: General Professional Technical Skill</b>									
Medical center	5.00	.00	1	3.95	.90	8	3.90	.76	2
Regional hospital	4.67	.58	4	3.97	.86	9	3.84	.76	3
Local teaching hospital	4.75	.44	1	4.07	.65	8	3.68	.82	6
Local nonteaching hospital	4.65	.59	2	3.91	.93	6	3.69	.87	3
<b>Competency 2: Complex Professional Technical Skill</b>									
Medical center	5.00	.00	1	3.65	1.02	15	3.17	1.09	14
Regional hospital	4.14	.48	14	3.66	1.08	15	3.06	1.08	15
Local teaching hospital	4.30	.47	12	3.39	1.02	18	2.49	1.12	21
Local nonteaching hospital	3.83	.70	20	3.35	1.16	18	2.60	1.12	20
<b>Competency 3: General Clinical Skill</b>									
Medical center	5.00	.00	1	3.88	.94	11	3.91	.82	1
Regional hospital	4.57	.60	9	3.94	.84	10	3.89	.78	2
Local teaching hospital	4.70	.47	4	4.10	.67	7	3.83	.78	2
Local nonteaching hospital	4.65	.54	2	3.98	.88	3	3.69	.98	3
<b>Competency 4: Specific Clinical Skill</b>									
Medical center	4.67	.52	16	3.55	1.00	18	2.94	1.32	18
Regional hospital	4.00	.45	18	3.62	1.10	16	3.12	1.09	13
Local teaching hospital	4.10	.45	18	3.35	1.00	20	2.63	1.24	20
Local nonteaching hospital	3.97	.65	15	3.41	1.24	16	2.37	1.22	21
<b>Competency 5: Long-Term Care/Geriatric Skill</b>									
Medical center	4.33	.52	21	3.60	.97	16	2.89	1.01	19
Regional hospital	3.95	.92	19	3.38	1.07	21	2.94	.87	18
Local teaching hospital	4.20	.62	16	3.41	.97	17	2.92	1.06	16
Local nonteaching hospital	3.86	1.06	17	3.18	1.09	21	2.96	1.11	16
<b>Competency 6: Multiple Skills</b>									
Medical center	4.67	.52	16	3.80	.80	13	3.09	.96	15
Regional hospital	4.19	.68	13	3.77	.81	14	3.06	.79	16
Local teaching hospital	4.28	.57	14	3.90	.75	12	2.88	1.04	17
Local nonteaching hospital	4.11	.71	13	3.57	.88	13	2.68	.96	18
<b>Competency 7: Assessment Skill</b>									
Medical center	5.00	.00	1	4.06	.78	6	3.34	.92	11
Regional hospital	4.90	.30	1	4.20	.83	3	3.65	.68	6
Local teaching hospital	4.68	.48	7	4.15	.69	5	3.22	1.08	11
Local nonteaching hospital	4.57	.55	6	3.91	.83	6	3.24	.78	11
<b>Competency 8: Ability to Work Independently</b>									
Medical center	5.00	.00	1	4.07	.89	5	3.84	.90	4
Regional hospital	4.71	.46	2	4.17	.88	4	3.84	.76	3
Local teaching hospital	4.75	.44	1	4.37	.70	1	3.73	1.05	3
Local nonteaching hospital	4.62	.55	4	3.94	.89	5	3.78	.71	2
<b>Competency 9: Critical Thinking and Problem Solving</b>									
Medical center	5.00	.00	1	4.02	.76	7	3.36	.92	10
Regional hospital	4.62	.59	5	4.03	.91	7	3.41	.69	11
Local teaching hospital	4.63	.50	9	4.27	.67	2	3.37	1.11	10
Local nonteaching hospital	4.43	.60	10	3.87	.82	9	3.25	.86	10

**Table 2. (continued)**  
**Comparison Between the Demand and Supply for Nursing Competencies:**  
**Descriptive Information on 21 Nursing Skills**

Variable	Demand (Employers)			Demand (Employees)			Supply (Employees' Self-Assessment)			
	Type of Hospital	Mean	Standard Deviation	Rank*	Mean	Standard Deviation	Rank*	Mean	Standard Deviation	Rank*
<b>Competency 10: Writing and Verbal Communication</b>										
Medical center	5.00	.00	1	3.93	.82	9	3.22	.98	12	
Regional hospital	4.33	.73	12	4.00	.76	8	3.16	.76	12	
Local teaching hospital	4.60	.50	10	3.95	.71	11	3.15	1.04	12	
Local nonteaching hospital	4.22	.58	11	3.66	.94	11	3.46	.74	8	
<b>Competency 11: Interpersonal Communication</b>										
Medical center	5.00	.00	1	4.10	.73	3	3.58	.75	8	
Regional hospital	4.62	.59	5	4.09	.78	6	3.54	.65	9	
Local teaching hospital	4.75	.44	1	4.05	.77	9	3.73	.92	3	
Local nonteaching hospital	4.62	.59	4	3.91	.88	6	3.63	.76	5	
<b>Competency 12: Professional Orientation</b>										
Medical center	5.00	.00	1	4.15	.79	1	3.75	.70	5	
Regional hospital	4.62	.59	5	4.26	.71	1	3.62	.76	7	
Local teaching hospital	4.70	.47	4	4.15	.76	5	3.71	.81	5	
Local nonteaching hospital	4.68	.53	1	4.00	.81	2	3.59	.81	6	
<b>Competency 13: Case Management</b>										
Medical center	5.00	.00	1	3.75	.93	14	2.95	.93	17	
Regional hospital	4.14	.65	14	3.79	.91	13	3.11	.81	14	
Local teaching hospital	4.25	.44	15	3.83	.92	13	3.10	1.02	14	
Local nonteaching hospital	4.08	.60	14	3.56	.99	14	2.98	.92	14	
<b>Competency 14: Ability to Supervise</b>										
Medical center	4.83	.41	13	3.54	.93	19	2.88	.95	20	
Regional hospital	4.10	.64	16	3.41	.99	20	2.83	.98	19	
Local teaching hospital	4.05	.39	19	3.49	.81	16	2.85	1.05	18	
Local nonteaching hospital	3.81	.52	21	3.33	1.07	19	2.72	1.06	17	
<b>Competency 15: Resource Management</b>										
Medical center	4.83	.41	13	3.57	.85	17	2.84	1.01	21	
Regional hospital	4.05	.67	17	3.42	1.12	19	2.65	.98	21	
Local teaching hospital	4.20	.52	16	3.61	.74	15	2.80	.98	19	
Local nonteaching hospital	3.84	.60	19	3.44	1.12	15	2.61	1.04	19	
<b>Competency 16: Team Building and Teamwork</b>										
Medical center	4.83	.41	13	4.08	.80	4	3.89	.80	3	
Regional hospital	4.45	.60	10	4.21	.64	2	4.00	.71	1	
Local teaching hospital	4.70	.57	4	4.17	.59	4	3.85	.76	3	
Local nonteaching hospital	4.51	.61	7	4.09	.95	1	3.92	.84	1	
<b>Competency 17: Leadership</b>										
Medical center	4.50	.55	19	3.50	.94	20	3.06	1.03	16	
Regional hospital	3.75	.55	21	3.48	.94	17	2.79	1.15	20	
Local teaching hospital	4.05	.60	19	3.37	.73	19	2.95	.90	15	
Local nonteaching hospital	3.86	.54	17	3.37	.98	17	2.98	1.02	14	
<b>Competency 18: Delegation</b>										
Medical center	4.50	.55	19	3.42	.96	20	3.19	.88	13	
Regional hospital	3.80	.70	20	3.48	.94	17	2.97	.98	17	
Local teaching hospital	3.95	.60	21	3.33	.86	21	3.15	.84	12	
Local nonteaching hospital	3.89	.66	16	3.32	.91	20	3.12	.98	13	



**Table 2. (continued)**  
**Comparison Between the Demand and Supply for Nursing Competencies:**  
**Descriptive Information on 21 Nursing Skills**

Variable	Demand (Employers)			Demand (Employees)			Supply (Employees' Self-Assessment)		
	Mean	Standard Deviation	Rank*	Mean	Standard Deviation	Rank*	Mean	Standard Deviation	Rank*
<b>Competency 19: Flexibility</b>									
Medical center	4.67	.52	16	3.87	.85	12	3.61	.83	7
Regional hospital	4.35	.49	11	3.85	.71	12	3.57	.98	8
Local teaching hospital	4.30	.47	12	3.78	.70	14	3.58	.84	9
Local nonteaching hospital	4.16	.60	12	3.62	.96	12	3.41	1.00	9
<b>Competency 20: Health System Knowledge</b>									
Medical center	5.00	.00	1	3.92	.81	10	3.55	.87	9
Regional hospital	4.62	.50	5	3.91	.84	11	3.51	.85	10
Local teaching hospital	4.50	.51	11	4.03	.73	10	3.59	.87	8
Local nonteaching hospital	4.51	.56	7	3.84	.90	10	3.23	.93	12
<b>Competency 21: Self-Coping Skill</b>									
Medical center	5.00	.00	1	4.12	.86	2	3.60	.83	6
Regional hospital	4.71	.46	2	4.12	.82	5	3.70	.74	5
Local teaching hospital	4.65	.59	8	4.26	.55	3	3.66	.91	7
Local nonteaching hospital	4.51	.56	7	3.95	.91	4	3.56	.80	7

NOTE: Rank\*: the mean values of all 21 nursing competencies were ranked from high to low within each hospital type (medical center, regional hospital, local teaching hospital, and local nonteaching hospital).

self-assessment for these same nursing competencies (the supply side) across different types of hospitals in Taiwan's hospital industry. In general, medical centers had a higher demand for all three competency groups (basic-level patient care skills, intermediate-level patient care/fundamental management skills, and advanced-level patient care/supervision skills) than the three other hospital types. Since medical centers have more critical care patients and require more complex technical skills than the other types of hospitals, this finding matched the practical nursing environment. In this study, nurses' perceptions of their job demands for nursing competencies and their self-evaluations of their own skills were not consistent with the hierarchical levels of their working hospitals' types (medical centers as treating most critical patients; local nonteaching hospitals as treating fewest critical ones). In other words, nurses working in medical centers did not perceive

that their jobs required more complicated skills than those nurses who worked in the other types of hospitals. In addition, according to these employees' perspectives, nursing competencies in medical centers were not always more sufficiently supplied than for the other types of hospitals.

In comparing the rankings of these 21 nursing competencies, five competencies were rated as being in relatively high demand by employers as well as in sufficient supply across the four types of hospitals. These five competencies were general professional technical skill, ability to work independently, interpersonal communication, professional orientation, and self-coping skill. Except for self-coping skill, the other four competencies were categorized as group 1, basic-level patient care skills. In other words, all hospitals had a consistently high level of demand for these competencies, while at the same time, these nurses perceived that they were sufficiently

equipped to perform these functions. In the factor analysis, self-coping skill was conceptualized as a fundamental management skill in the second competency group (intermediate-level patient care and fundamental management skills). Self-coping skill was in high demand by both employers and nurses; this skill should be emphasized as one of the prerequisites for a nurse.

Among the implications for this study's results across different types of hospitals and for a time period beyond this project are that the Taiwan Ministry of Education and the National Union of Nurses' Association should develop a long-term and nationwide plan with followup evaluation mechanisms for the nursing workforce. The nursing education system is viewed as being responsible for training the nation's future nurses. Therefore, health care systems should consider adopting these findings to reflect the needs of the nursing workforce as influenced by the changes in the

Taiwanese nursing environment, including redesigning management of nursing practice in hospitals. In other words, nursing professional schools could organize and structure their programs according to the demand for nursing competencies and the inefficiency in nursing competency supply.

#### Recommendations for Future Research

Similar issues should be explored through the use of longitudinal or time-series research designs to better understand the possible interactions between the demand and supply for these competencies in the nursing market. In addition, a cross-national research design might help to understand the nursing market in a global manner. A qualitative approach could be used to understand in-depth employers' perceptions of desired nursing competencies. Because the subjects of this study were nursing directors employed by hospitals in Taiwan, caution should be used when generalizing the results of this study to other countries. \$

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#### Journey for Excellence

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in the skill building they need to fulfill our mission's promise of "exceptional health care services." The return on investment has come in the form of excellent care and excellent outcomes for our patients and staff.

We have created an environment of trust, so our nurses know that they will be supported with the resources required to provide services that are exceptional, not just adequate. In our organization, nurses are not victims. Rather, they are empowered to control decisions affecting their ability to practice and deliver excellent care. \$

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