

## Original Article

# Current demand of nursing competency in China

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**Abstract:** With the economic expansion and life style alteration in China recent years, hospital employers are demanding qualified and competent nurses to provide high-quality clinical care. However, nursing education in China tends not to reflect the changing demands in the hospital nursing environment in time into the program curriculum; partially due to the lack of information on health care employers' demand on nursing competencies. We aimed to investigate the current demand of nurses' competencies from health care institutions regarding all educational background in China. employers from 396 medical institutions of 17 provinces, including 164 secondary hospitals and 59 tertiary hospitals and 173 rehabilitation centers were invited to a survey using a pre-validated instrument on a five-point Likert scale (1=never required, 2= not required, 3= neutral, 4= required, 5=extremely required). The demand on main core competences components by health care employers were found to be as follows: clinical care (scored  $4.94\pm 0.23$ ), teaching-coaching (scored  $4.83\pm 0.38$ ), critical thinking and research aptitude (scored  $4.81\pm 0.43$ ), interpersonal relationships (IPR, scored  $4.76\pm 0.43$ ), professional-development (scored  $4.67\pm 0.47$ ), legal/ethical practice (scored  $4.25\pm 0.55$ ) and leadership (scored  $3.86\pm 0.74$ ). Most of the demand for nursing expertise still focused on major departments such as department of Internal medicine, surgical department and OBGYN, the total of which accounted for 50%-60%. The departments generally required less nursing staff exhibited an overall increase of the demand over the years such as department of imaging and department of geriatrics. Our results are not only indicative for Chinese nursing educators but might also be helpful for other developing countries facing society aging problem and rapid economy booming.

**Keywords:** Nursing education, nursing service, nursing competency, China

### Introduction

With the economic expansion and life style alteration in China recent years, disease spectrum has altered accordingly [1]. For example, chronic non-communicable diseases have risen to top causes for mortality in Chinese residents [2]. It is thus clear that health care providers demand for nursing competencies alters in these new situations, and this change might be of value for other developing countries to plan their health care system when a rapid economic booming and change of life style are expected. Along with the increasing complexity of nursing services, hospital employers are demanding qualified and competent nurses to provide high-quality clinical care and the amount of nursing expertise alters along with this economic development [3]. However, nursing education in China tends not to reflect the changing demands in the hospital nursing envi-

ronment in time into the program curriculum; partially due to lack of information on health care employers' demand. This deficiency results in new graduates having difficulties coping in their new positions and increased tension among patients, health care workers and health care institutions [3].

Regulated nursing practice with close monitor of professional competencies remains essential in China. A national nurse registration examination has been the major monitor for the standard of nurse's registration and the only accreditation for professional competencies so far [4].

Research has been focused on the medical institutions' demand on educational background [5, 6], yet it is the nurse's professional competencies that the employers really cared most [7]. With limited recourse and intense ten-

## Nursing competency investigation

sion between patients and health care workers in China, the health care institutions can only afford offering few opportunities for improving nurses' competencies. Under those circumstances, rather than analyzing the types of nurse's educational background entering the workforce and shortages of nurses in certain types, analyzing the demand of nurses' competencies from health care institutions appears more important.

Several nursing competency instruments have been developed in different culture settings and mainland China is one of them [3, 4, 8-11]. We found two psychometrically sound instruments evaluating Competency Inventory for Registered Nurse through literature search, while one of them was specifically designed for Chinese baccalaureate nursing graduates [4, 11]. We aimed to investigate the current demand of nurses' competencies from health care institutions regarding all educational background, so we employed the instrument developed by Liu, et al [4] in China for this purpose. Survey for hospitals and rehabilitation centers' demand for nurse expertise in different departments as well as the interviews of employers were carried out as well.

### Methods

#### *Subjects and settings*

Nursing employers (for example, directors, associate directors, supervisors and head nurses) were administrators who managed human resources-related issues in nursing staff. The health care providers are classified as tertiary hospitals, secondary hospitals and rehabilitation centers who provides community health care services. Those employers from 396 medical institutions of 17 provinces, including 164 secondary hospitals and 59 tertiary hospitals and 173 rehabilitation centers were invited to a survey using the instrument developed by Liu, et al [4]. At least one research unit was assigned to each province/municipality to conduct the survey and implement the questionnaire distribution and collection.

#### *Research methodology*

Approval for the study was obtained from the Weifang People's Hospital Review Board. This study used a cross-sectional survey design and

quantitative approach. The data collection period was from May to July 2014 for hospital employers.

The survey includes seven components and 59 items in total. They are 1. Critical thinking and research aptitude (Defend decisions using scientific knowledge principles; Identify priority risk in clinical situations; Makes decisions that reflect both knowledge of facts and good judgment; Figure out more than one way to solve confronting clinical problems; Integrate pertinent data from multiple sources; Employ empirical and personal knowledge to examine the rationale put forth by self and others; Incorporate relevant research findings into nursing practice; Assist in the clinical research data collection; Analyze data accurately and comprehensively; Use different ways to search for information); 2. Clinical care (Develop a nursing care plan for a specific patients based on a primary and secondary data base; Utilize technological advances to improve nursing and health care; Detect and document significant changes in a patient's condition; Assess all health dimensions of client, i.e. physical, psycho-social, spiritual aspects; Provide culturally sensitive care; Deliver accurate, comprehensive and effective nursing in accordance with the care plan; Give emotional support to families; Identify and include immediate patient needs in the nursing care plan; Involve the patient and family in the planning and implementation of care; Evaluate results of nursing care interventions) 3. Leadership (Delegate responsibility for care based on assessment of abilities of individuals; Get group approval in important matters before acting; Act to develop an atmosphere for teamwork and cooperation; Recognize other's contributions and achievements; Act as a change agent for the integration of new concepts into clinical practice; Promote cooperation, trust, and open exchange of ideas; Coordinate the relation between nurses and all related personnel; Accept and use constructive criticism; Resolve conflict in a positive way; Identify and understand others' personal strengths and weaknesses); 4. Interpersonal relationships (Cooperate with other care providers solving to meet patient needs; Adjust actions in relation to other's actions; Express disagreements in a constructive manner; Communicate facts, ideas and feelings to other health team member verbally; Build trust

## Nursing competency investigation

**Table 1.** An overview of the survey subjects (Medical Institutions)

	Tertiary Hospitals	Secondary hospitals	Rehabilitation centers
East China	33	84	87
Shanghai	6	28	20
Hebei	1	5	6
Fujian	3	12	6
Liaoning	2	7	7
Zhejiang	5	8	15
Guangdong	6	6	11
Jiangsu	4	6	5
Shandong	5	7	14
Tianjin	1	5	3
Central China	18	44	41
Jiangxi	3	7	3
Heilongjiang	5	14	15
He'nan	5	11	14
Hu'nan	5	8	8
Shanxi	0	4	1
West China	8	36	45
Gansu	2	10	23
Chongqing	3	8	5
Yunnan	0	6	4
Sichuan	3	12	13

Note: East, Central and Western China were defined according to China Statistical Year Book 2013, East China includes Beijing, Tianjin, Hebei, Liaoning, Shanghai, Jiangsu, Zhejiang, Fujian, Shandong, Guangdong, Hainan; Central China includes Shanxi, Jilin, Heilongjiang, Anhui, Jiangxi, He'nan, Hubei, Hu'nan; West China includes Neimenggu, Chongqin, Guangxi, Sichuan, Guizhou, Yunnan, Xizang, Shaanxi, Gansu, Qinghai, Ningxia, Xinjiang.

by keeping word, commitments, and promises; Acknowledge the differences in beliefs and cultural practices of individuals/groups; Show willingness to share workload when needed; Express facts and thoughts in writing in a clear and organized way); 5. Legal/ethical practice (Carry out nursing practice according to legal requirements and organizational policy; Report all perceived malpractice incidents to responsible persons; Function in accordance with legislative and common law affecting nursing practice; Take responsibility for one's own performance; Serve as an advocate for the rights of clients or groups; Respect the patient's/client's right to privacy; Ensure confidentiality and security of written and verbal information acquired in a professional capacity; Respect the patient's/client's right to choice and self-

determination in nursing and health care); 6. Professional-development (Understand role of professional organizations and actively participate; Display self-direction in personal development; Use learning opportunities for ongoing personal and professional growth; Recognize own learning needs; Demonstrate self-awareness on personal limitations and strengths; Understand relevant and current information concerning health care system); 7. Teaching-coaching (Identify learning needs of others including patients, families, and junior nurses; Coach junior nurses to meet both the task needs and their developmental needs; Take up the preceptor role to support new nurses in adapting a new working environment; Initiate the appropriate orientation programs for new nurses; Use opportunities for patient teaching when they arise; Provide consultations for nurses and/or other care personnel; Develop an explicit teaching strategy to teach patients and families).

Subjects' participation was voluntary and an informed consent form was included in the first section of the questionnaire. The participants were informed that participation in the study was voluntary and withdraw was allowed any time without being penalized or losing any benefits.

Moreover, the participants were reassured that their responses would be kept confidential and their identities would not be revealed on research reports and publications of the study.

### Data analysis

Double data entry was used to ensure high data entry quality. Data analysis was conducted by SPSS 19.0 for Windows (SPSS Inc., Chicago, Illinois).

## Results

### Overview

To cover most of the regions in China, survey was sent out for 450 medical institutions, 396 of which was completed and returned, the recovery rate was 88%. The survey was conducted in 396 medical institutions from 17 provinces, of which 164 is national accredited secondary hospitals and 59 national tertiary hospitals and 173 national accredited rehabili-

## Nursing competency investigation

**Table 2.** Demand for nursing competencies in secondary, tertiary hospitals and rehabilitation centers

Components	Mean	Standard deviation
Critical thinking and research aptitude	4.81	0.43
Clinical care	4.94	0.23
Leadership	3.86	0.74
Interpersonal relationships (IPR)	4.76	0.43
Legal/ethical practice	4.25	0.55
Professional-development	4.67	0.47
Teaching-coaching	4.83	0.38

tation centers. 84 secondary hospitals, 33 tertiary hospitals and 87 rehabilitation centers from 8 provinces were located in East China; 44 secondary hospitals, 18 tertiary hospitals and 41 rehabilitation centers from 5 provinces were located in Central China; 36 secondary hospitals, 8 tertiary hospitals and 45 rehabilitation centers from 4 provinces were located in West China (**Table 1**).

### Measurements

Nurse employers were asked to rate the extent of their jobs' demands for these nursing on a five-point Likert scale (1=never required, 2= not required, 3= neutral, 4= required, 5=extremely required, according to original design). As shown in **Table 2**, respondents believed that the main core competences components needed to be possessed by nursing students in order to accomplish the jobs are as follows: clinical care (scored  $4.94\pm 0.23$ ), teaching-coaching (scored  $4.83\pm 0.38$ ), critical thinking and research aptitude (scored  $4.81\pm 0.43$ ), interpersonal relationships (IPR, scored  $4.76\pm 0.43$ ), professional-development (scored  $4.67\pm 0.47$ ), legal/ethical practice (scored  $4.25\pm 0.55$ ) and leadership (scored  $3.86\pm 0.74$ ).

### Interviews

Among these surveyed employers (directors, associate directors, supervisors and head nurses); 70 of them were further interviewed to clarify their understanding of the items in core competences components. Through the interview, the employers expressed relatively good impression towards nursing newly graduates as a whole. In their opinion, current nursing programs and clinical training provided by hospitals for the programs helped most nursing grad-

uates maintained a good professional identity, a stable loyalty towards nursing professional regardless remuneration situation. The major complain was focused on social adaptability and interpersonal skills, lack of confidence, sense of responsibility, and lack of innovation ability.

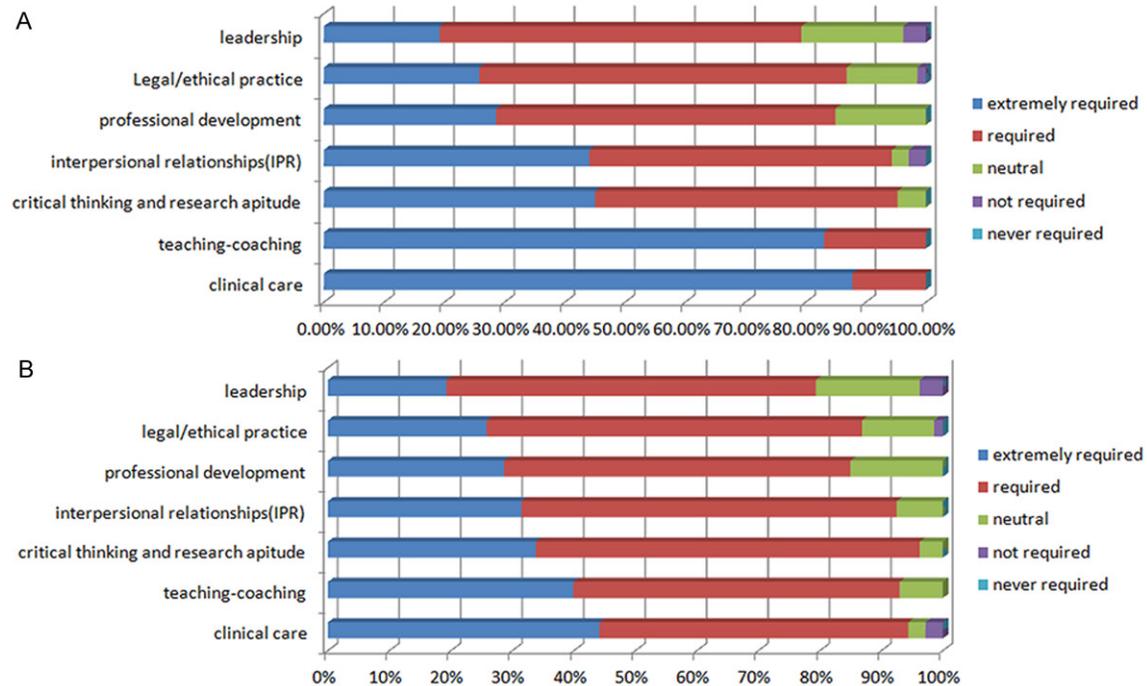
### Demand for professional competencies

We then analyzed the survey results in a categorical form and shown in **Figure 1**. The demands for nursing competencies in secondary and tertiary hospitals are shown in **Figure 1A**. Over 90% of hospitals indicated "extremely required" or "required" for the following four components of competencies: clinical care, teaching-coaching, critical thinking and research aptitude, and interpersonal relationships (IPR). Similar demands were found in rehabilitation centers (**Figure 1B**). We further analyzed the various demand of nursing expertise from 2012 to 2016 in different departments in 396 hospitals and centers as shown in **Figure 2**. The departments included in the survey were (A) Internal medicine (B) Surgical (C) OBGYN, Obstetrics and gynaecology (D) Pediatrics (E) operating room (F) Emergency (G) ICU, Intensive care unit (H) Imaging (I) Geriatrics, and the trends of nursing expertise demand of each department were illustrated in **Figure 2** accordingly. Most of the demands still focused on major departments such as department of Internal medicine, surgical department and OBGYN, the total of which accounted for 50%-60%. The departments generally required less nursing staff exhibited an overall increase of the demand over the years such as department of imaging (**Figure 2H**) and department of geriatrics (**Figure 2I**).

### Discussion and conclusion

We used pre-validated instrument to examine the current demands for nursing competencies in secondary, tertiary hospitals and rehabilitation centers in China, the survey was validated to be a competency inventory with reasonable inter-item correlations [4]. The instrument contains 7 competency components with a total of 59 items. Although every components were rated somewhat required, the competency of clinical care was rated highest required in all secondary, tertiary hospitals and rehabilitation centers while the competency of leadership

## Nursing competency investigation



**Figure 1.** Demand for nursing competencies in hospitals and rehabilitation centers, (A) demand for nursing competencies in secondary and tertiary hospitals (B) demand for nursing competencies in rehabilitation centers; data shown in percentages.

was rated the lowest among the employers. It is in agreement with the observation that clinical care skills are still perceived as a basic competency for a professional nurse across societies [4, 12]. Not surprisingly, leadership (abilities that an individual would engage in executing a leadership function regardless of one's specific job title) was perceived as least important among the employers (**Table 2** and **Figure 1**), nurses have been traditionally considered as followers and passive subordinates. Yet, with the new era of evidence based practice, it has been found that leadership is important for innovation and empowers nurse expertise to work with creative thinking and risk-taking decisions to solve the problems [13].

Employers perceived legal/ethical practice component as one of the important competency required for nursing expertise (**Table 2** and **Figure 1**), indicating that with the increasing complexity of health care delivery, ensuring the protection of individuals and/or community as well as accountability to the public are considered the critical competencies of nurses by health care providers in China. The rapid devel-

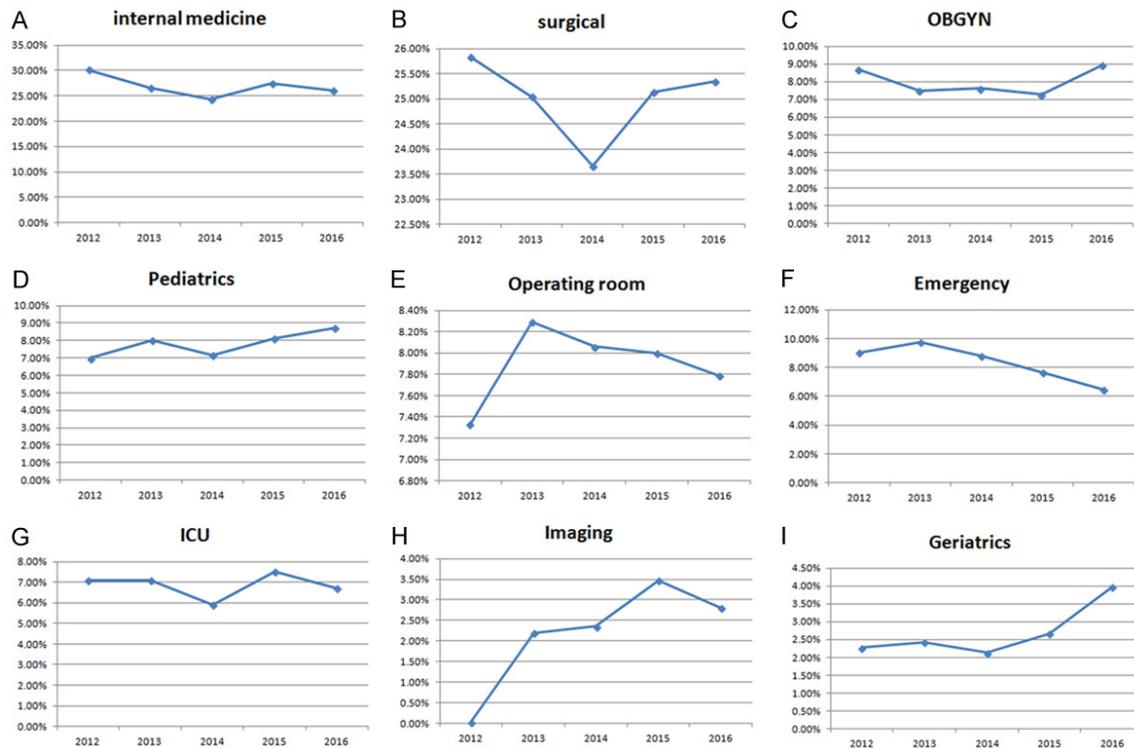
opment of economy and health care system has forced administrators in China to adopt the global view.

Nevertheless, the major demands of nursing expertise still lie mostly in major departments such as department of Internal medicine, surgical department and OBGYN; while traditionally considered small departments such as department of imaging and geriatrics are experiencing an expansion of nursing demanding due to the shift in economy and what people required from health care system in China. This is not only indicative for Chinese nursing educators but might also be helpful for other developing countries facing society aging problem and rapid economy booming.

Based on these findings, we'd like to provide following suggestions:

Our findings indicated that current structure of nursing programs in China still has room to be improved, i.e., coordinated social sciences and public health knowledge should be highlighted to improve students' critical thinking, problem-solving ability, communication ability and teamwork.

## Nursing competency investigation



**Figure 2.** Demand for nursing expertise in hospitals and rehabilitation centers from 2012 to 2016, (A) Internal medicine (B) Surgical (C) OBGYN, Obstetrics and gynaecology (D) Pediatrics (E) operating room (F) Emergency (G) ICU, Intensive care unit (H) Imaging (I) Geriatrics; data shown in percentages.

### *Requirement for nursing students in nursing programs*

Knowledge requirements includes a. He/She should master some basic knowledge of humanistic and social science and natural science for the purpose of application and should use them necessarily and sufficiently; b. He/She should master some basic medical knowledge, have a solid knowledge of basic nursing theory and command solid professional basic skills; c. He/She should be able to provide services for the prevention, health care and nursing of common diseases and frequently-occurring diseases by utilizing nursing skills, maintain and promote health and alleviate sufferings, and improve the quality of life service; d. He/She should be able to make use of modern information technology to obtain new knowledge and new technology. Competency required based on knowledge includes a. He/She should have proficient operational capabilities of basic nursing techniques and basic specific nursing techniques; b. He/She should have a strong ability to use nursing procedure to implement holistic nursing, and be able to apply put mod-

ern nursing concept into practice, forming a planned, systematic and specific working procedure for implementing nursing; c. He/She should have abilities of primary interpersonal communication, problem solving and nursing management; d. He/She should have abilities of primary community nursing, health care, prevention and rehabilitation nursing; e. He/She should be able to use web based learning and other resources to accomplish self-promotion; f. He/She should have abilities of critical thinking and problem-solving.

### *Requirements for hospital training center*

As part of nursing program training systems, the training center should be able to provide following items to facilitate cultivating nursing students' competencies.

The major goal for hospital training centers should be helping nursing students to develop basic clinical care competency, and during this process skill-oriented case-based learning is recommended. The simulation training room is recommended to be open to nursing students

## Nursing competency investigation

around the clock (24/7) so that easy accesses could be achieved. Furthermore, an effective system of clinical care skill training and assessment should be developed accordingly.

For the simulation training rooms, suggested equipments include electric suction apparatus, electric gastric lavage machine, micro-infusion pump, medical oscillator, ultrasonic nebulizer, portable high pressure steam sterilizer, medical cabinet, central oxygen supply and vacuum suction systems, rolling carts and lift stretchers, simulation model of intramuscular injection, senior adult nursing model, bedsore nursing model, simulation model of intradermal injection, simulation model intravenous infusion arm, simulation model of deep vein puncture and sphygmomanometer.

For physical examination purposes, the training room should further supply the students with equipments include Electrocardiograph (ECG), consumable medical ware, cardiopulmonary auscultation system and stethoscopes.

### Disclosure of conflict of interest

None.

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