

## ORIGINAL PAPER

### **Research Status and Competence of Clinical Nursing Specialist and Construction on Core Competence Model for Osteoporosis Specialized Nurse in Mainland China**

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#### **Abstract**

**Background:** Osteoporosis (OP) has become a significant public health problem in mainland China. OP significantly increase the requirement of patients to seamless medical care service. So it is time to train the OP specialized nurses to promote the development of nursing science and improve the quality of clinical nursing practice and outcomes of patients.

**Objectives:** The aim of this article is to introduce the connotation, the current status and domains of research, and build core competence model for Chinese osteoporosis specialized nurse, as well as the implications for training osteoporosis specialized nurse in mainland China.

**Methods:** An comprehensively understanding and reflection of the development history of clinical nursing specialist could ensure its continued success as a predominate force in health restoration , development of OP specialized nurses in mainland China and the promotion of the health and well-being of people. A review of the literature yielded a lack of cohesive information about the evolution of the CNS role, prompting an investigation into the historical, current, and future aspects of the CNS.

**Outcomes:** This article compiles information related to the development history of the core competence and construct the roles-competences model and core competence model at the basis of core competencies theory, clinical ladders theory, roles theory and holistic theory apply to Chinese OP specialized nurses.

**Conclusions:** An reasonable and scientific core competence model is the consolidate basis to promote the development of nursing science and OP specialized nurses in mainland China.

**Key words:** Core competence; Nursing sciences; Osteoporosis; Specialized nurse; Clinical Nursing Specialists

## Introduction

To enhance the quality of clinical nursing practice, promoting the development of nursing science and practice of specialized nursing in mainland China have become an inevitable trend of development of modern nursing to cope with the challenges resulted from the rapid development of medical science and technology, increasingly growing numbers of aging population, changing of disease spectrum and its management model and fine division of clinical nursing practice (Fagerström, 2009; Wickham, 2013). Core competence of clinical nursing staffs can directly influence the quality of clinical nursing practice and care outcomes of clients (Carroll, 2004). The published studies showed that raising the core competence of nurses can significantly improve the quality of clinical nursing practice and reduce the medical expenditure (Hoffman et al., 2005). Consequently, research and train on core competence of nursing staffs are the principal filed for the health care system, health administration system, and nursing education system (Ding et al, 2010; Song & Wang, 2009). In China, osteoporosis (OP), diabetes mellitus (DM), hypertension (high blood pressure) have become three major chronic and non-infectious diseases (Mithal, 2009; Xu et al., 1996; Wang et al., 2009). OP not only significantly influence the healthy and life quality of clients, also greatly increase the economic burden of whole society and each family, while significantly increase the need to seamless medical care service to clients with OP. Nurse must grasp unique core competence for different nursing branch, and they must cultivate unique and solid core competence to offer the best available nursing to clients so that nursing quality will be improved, while promoting the performance of continuous care to ensure that clients can get appropriate health information guidance in any stage of Hospital-Community-Family linkage. To date, no training program of core competence for OP specialized nurses was developed in mainland China, the aim of this article is to review the

connotation, the current status and domains of research, and preliminarily build core competence model for Chinese osteoporosis specialized nurses, as well as the implications for training osteoporosis specialized nurse in China. It aims to promote the development of nursing science and specialized nurse in mainland China.

## Concept

### *Capacity*

Capacity belongs to the scope of psychology, and its definition is that someone with his personal psychological traits promote a task smoothly and complete effectively (Ye et al., 2004). Definition is varied from a discipline to others. O'Shea defined the capacity as an individual having some knowledge, skills, abilities, and behavior to correctly, skillfully accomplish professional practice and missions from extend fields related to self-discipline (O'Shea, 2002). Webster dictionary says: "A person's knowledge, skills, and abilities are necessary to accomplish specific discipline practice." (Liu, 2009). Definition of capacity from Citing is that psychological traits successfully complete some tasks, and it could be divided into common and special, basic and comprehensive abilities (Li, 2007). These above various definitions on capacity have a common connotation that capability is an organism formed by combination of professional knowledge and skills absorbed from continuous learning and practice, their professional attitude, and personal traits. Degree of capacity can be quantified with means of specific measurement indicators, and with scalability and dynamic characteristics.

### *Core competence and core competence of nurse*

#### *Core competence*

The term of core competence was first presented by Prahalad and Hamel in 1990 (Fan & Xi, 2010). Because of the disagreement on the concept of core

competence for different scholars, there is a lack of a unified and specification definition. Axley defined it as skills and abilities to perfectly complete an assigned task (Axley, 2008). Elaing thought that it was composed by technical and non-technical aspects. Technical layer is unique for each discipline, and non-technical layer (i.e. ability, attitude, knowledge, etc.) is the basis for exertion of core capacity (Elaing, 2002). Xu. from mainland China treated core competence as a key factor to achieve performance, and 20 percent capacities may be composed of it, whereas, core competence directly affects 80 percent performance (Xu, 2009). Core competence is an essential for distinguishing atypical individual or profession, and it is different from a single element of knowledge, skills, or attitude. Core competence is just an organism integration composed by knowledge, skills, and personal traits, and it wouldn't be duplicated for different categories.

### ***Core competence of nurse***

In 1960s, researches on core competence of nurses were emerged in American as the rapid development of core competence theory (Guo, 2012), and all kinds of layers from health care system gradually were conscious of the importance to achieve development of individual, organizations, and nursing specialty. Core competence of nurses can be defined as having the knowledge, skills, and sense of worth that lead to best nursing practices and the highest possible level of job performance, and it is now seen as central to patient-care outcomes, and its importance reaches far beyond the domain of nursing regulation and licensing (Blevins, 2001). Core competence of nurses is a dynamic state influenced by experience and education, and it is an ongoing process of initial development, maintenance of knowledge and skills, educational consultation, remediation, and redevelopment, and is the only part of the process of maintaining a high-quality workforce; It will not end even the basic education is finished (Benner, 1984; Whelan,

2006). The definition on core competence of nurses was defined on the basis of specific nursing practice and development of nursing specialty, consequently, having no unified concept definition criteria (Cowin et al., 2008). In 2001, International Council of Nurses (ICN) defined capacity of nurses as a specialty having knowledge, skills, judgment and personal traits to carry out nursing services for safety under the ethic norms (Furlong & Smith, 2005). ICN firstly defined core competence of nurses as finishing the basic nursing courses education on the basis of the nursing specialty's starting point, developing nursing practice in the limited range of laws and regulations, and having ability to automatic carried out three-stage health care in all care institutes, in 2003 (You, 2007). At the beginning of 21st century, the term of core competence was introduced into homeland. Hospital administrators are gradually conscious of training core competence of nurses, and viewed it as essential comprehensive ability to participate in nursing practice (Wang & Yu, 2007). A qualitative research show that core competence of nurses is an organism combination of three elements including professional knowledge, skills, and professional attitudes (Liu et al., 2006). Fan L. from Chinese mainland defined core competence as an organism integration of systematic professional knowledge, skills, and abilities in specific nursing setting, and it determined the character and boundary of discipline (Fan & Xi, 2010).

Uniform and standard concept is used as a basis to construct a theory, rule to guide practice, premise to set goals and assessment. In consideration of the core competence and core competence of nurses' diversity, unified and standard the concept is an extremely urgent topic. In this article, core competence of OP specialized nurses is that a register OP specialty nurse who is provided with specific knowledge, skills, judgment, sense of wealth, and personal traits to offer high quality nursing service according to cost-effectiveness rule

based on literatures and theory analyses.

### ***Core competence framework for nurse***

The establishment of core competence of specialized nurses' model can propose a general description on core competence of specialized nurses for nation, display knowledge, skills, attitudes, practice domains, and benchmark of specialty nurses to the public (Liu, 2009), meanwhile, it can provide reference to set training curriculum, and supply introduction to build indicator system of evaluating the specific performance in clinical nursing practice (Furlong & Smith, 2005). The core competence standard of specialized nurses on various levels has been settled in America and Australia, and it was constantly updated as change of nursing practice and clients (James, 2008; ACORN, 2004).

### ***Current status on core competence model in western countries***

In 1996, Hamric et al. create a model of core competence for specialized nurses composed by 7 domains including direct practice competence, leadership and management competence, ethical decision making, coaching competence, research competence, consultation competence, collaboration competence. In her core competence model, direct practice competence is the most prominent portion, and it is a vital competence for specialized nurses. Also it can different the specialized nurse from nursing educator and administrator (Hamric et al., 2005).

In 1997, the Australian Nursing & Midwifery Council, (ANMC) posted a competence framework on specialized nurses composed by 3 aspects:

(1) a dynamic competence of practice on advanced knowledge and skills of extend to the unstable, unpredictable, and complex condition performed by nurses;

(2) competence of improving professional performance with autonomy and accountability

system;

(3) competence of promoting development of clinical nursing, influencing policy making and bettering collaboration.

For ANMC, specialized nurses' framework of competence give more specific emphasis on the practicing property, and the nursing services conducted by specialized nurses should be different from that of offered by general nurses (Gander, 2004). In 1999, the Association of Operation Room Nurses, (AORN) issued a standard on core competence of theatre nurses including personal development competence, coordination competence, judgment competence, communication competence, critical thinking competence, interpersonal relationship competence, etc. (Conner, 1999). In 2001, the American Nurses Association (ANA) published the framework on core competence of specialized nurses covering 7 aspects including health management competence, building and maintaining nurse-patient relationship competence, education and coaching competence, monitoring nursing quality and assurance competence, leadership and consultation competence, cross-cultural adaptation and provide cross-cultural nursing competence, developing personnel and profession competence (ANA, 2001). Cross-cultural adaptation and providing cross-cultural nursing competence is an unique part of this framework. With the globalization of the economy, Further communication between different nations is in-depth, therefore, understanding, cognizing, accepting, and adapting various culture, custom, and practice is an essential competence for each advanced practicing nurses (APNs) (Gorgan, 2002). In 2005, International Organization and College of Nurse Practitioners proposed the core competence on nurse practitioners including health promotion, prevention and disease management, nurse-patients relationship, education, coaching competence, vocation roles, cross-cultural nursing, etc. (Lenburg, 2009). Lenburg thought that core competence of

nurses was made up of assessment and intervention competence, communication competence, critical thinking, care and inter-personnel competence, management competence, leadership competence, education and knowledge integration competence (Lenburg, 2009).

#### ***Current status on core competence model at home***

Research on core competence of specialized nurses in western countries started early, and the framework on competence has tended to be mature. In contrast, core competence of specialized nurses has only just begun in China. The definition and framework's establishment on core competence for specialized nurses are still at a preliminary stage. In 2005, Hong Kong Hospital Authority (HKHA) issued framework on core competence composed by 11 aspects suitable to nursing staff of various levels, and including application of nursing knowledge and skills, the relationship of treatment and care, care management, operation and source management, personal qualities, profession quality, team cooperation, occupation career development, nursing service development, and ethical practice (Hong Kong Hospital Authority, 2005; Gorgan, 2002). In 2006, Liu M.'s and Yin L.'s research show that a registered nurse should be provided with 7 core competence including clinical nursing competence, education and consultation competence, inter-personnel competence, legal and ethical practice competence, professional development competence, critical thinking competence, and research competence (Liu et al., 2007). Ministry of Education and the Office of the Ministry of Health first proposed the concept of core competence of Chinese nurses in the "Training and guidance plan on the shortage of skilled talents in vocational nursing education for three year systems" in December, 2003. It links to grasp the standard nursing technics (skills/techniques), perform holistic nursing to clients, observe the reaction of common ailment and frequently-occurring disease, etc. (Xu, 2012). Zhao et al. built the framework on core

competence of oncology advanced practice nurse (OAPN) composed by clinical practice competence, education and consultation competence, coordination competence, research competence, management competence, and ethical making competence with Delphi methods (Zhao et al., 2011). Fan et al. constructed the model of core competence for emergency specialized nurses which consisted of a professional attitude, critical thinking competence, management competence, inter-personnel relationship competence, and professional development competence based on Delphi methods (Fan & Xi, 2011).

Although contents from different framework of core competence for specialty nurses are different, but all models contain common core portion including direct clinical practice competence, leadership and management competence, education and coaching competence, inter-personnel relationship competence, and research competence, it can be the basis for building model of core competence for different professions in different nations.

#### **Construction of core competence for OP specialized nurse**

##### ***Other theories for construction on core competence for OP specialized nurse***

##### ***Clinical ladders theory***

The term of clinical ladders first proposed by Creghton in 1964, and in 1984, Benner published a 5 layer model based on experiential learning theory that makes a clinical nurse from novice to expert, and it includes novice-beginner-competent-proficient-expert (NOLS, 2004). Other countries treated the 5 layer model as a basis for nursing advanced and hierarchical training (Hirose & Liu, 2004). Nurse advanced mainly according to their levels of education and work experiences to competent different levels of positions, and each level has its own appellation and responsibility in America. Under the conditions associated with the clinical practice, administrative capacity gradually

improved through nursing clinical practice, while competences were divided into five stages including base, growing, mainstay, management layer, and nursing specialist from top to bottom based on the proportion of professional competence, administrative capacity and research capabilities in the proportion of nursing personnel (Zeng et al., 2012).

The advanced path is similar with the title promotion path in our country, therefore, construction of advanced path for Chinese specialty nurses should be based on the fact of nursing education and clinical nursing practice, and criteria of the title promotion for nurses.

### ***Roles theory***

A role is a constituent part of culture in any particular occasion and it is a set of regulations that provided to the actors, and the process was expected to be completed in a long interaction period (Fan et al., 2010). In the field of psychology, the progress of analyzing and researching social action of personnel on role view was deemed to be rules of the theory. Roles theory was formed by roles perception, roles learning, and roles exception and so on.

The nurse is a dominant functional role in the nurse-patient relationship, and the role's function is always evolving and updating. Today, functional roles of nurses include clinical specialist, educator, consultant, supervisor, researcher, clinical manager, administrator, collaborator, communicator, liaison person, change agent and innovator, etc. (Doody & Bailey, 2011; Roberts et al., 2011).

Specific functional roles performed specially appointed roles function, and practice in specific filed. Because of the multiple roles of specialty nurses, therefore, core competence is essential to them.

So, it is an inevitable trend to construct the roles-competences model for Chinese specialized nurses according to current status of health care

needs. So that we could lay the foundations for construction on core competence for specialized nurses.

### ***Holistic nursing theory***

With the appearance of bio-psychosocial medical model and nursing process, holistic nursing which take patient as the center, modern nursing view as guidance, nursing process as basic framework, independently solve problems for clients as goal, and exert nursing process into clinical nursing practice and nursing management, has been a guidance for modern nursing and widely applied in nursing education and clinical nursing practice.

Holistic nursing refers to view clients as unified, opened organism macrocosm composed of diverse aspects including physiology, mentality, culture, spirit and so on. Nurse systematically offer the best available nursing to meet the client's medical needs. Holistic nursing has changed the traditional nursing model, and extends the functions and roles of nursing staff, expands the category of practice, while the higher requests are demanded for competence of the nurse.

Traditional nursing competence haven't already met the medical care need in the current society, therefore, it is greatly important to build a appropriate competence model to promote training of core competence for nurse and improve the availability of medical care resources and nursing quality according to educational and clinical fact in our country.

### ***Competence advanced model for OP specialized nurse***

According to the core competence theory for specialized nurse, literatures and theoretical analysis, a competence advanced model suitable for Chinese OP specialized nurse is preliminary established in nursing education and clinical nursing reality in China (Fig. 1). This model is made up of 2 domains including advanced pathway for nurse and

competence elevation pathway. Advanced pathway for nurse refers to nurse students, new nurse, general nurse, competent nurse, specialized nurse, and clinical nursing specialist (CNS).

Competent nurse is defined as having specialized skills and knowledge training and having competence to competent the specific specialized functions. They perform a special operation that differ from general nurse, bur lack of depth in theory compared with specialized nurse. The specific connotation of the model is that each competence ladder is foundation for loaded functional role, and each functional role achieved advanced rely on deep-seated training or education program at list the left based on competence equipped. For example, general populations now start to learn nursing knowledge based on perceptual knowledge to make theory preparation

for clinical nursing practice.

Nursing students graduated from college were termed a fresh nurse haracterized by implication of specialty knowledge from education and perceptual knowledge in clinical practice, and achieving accumulation of practice experience. Nursing students and new nurse were both placed on the competence preparation stage.

New nurse grasped general clinical nursing ability, interpersonal communication skills, personnel and profession development competence, and general critical thinking and research competence through 1-2 years' clinical practice. And their competence of combined knowledge and practices were enhanced, transforming role from new to general. General nurse is equivalent to the primary nurse in China. Other roles advanced paths are similar to this.

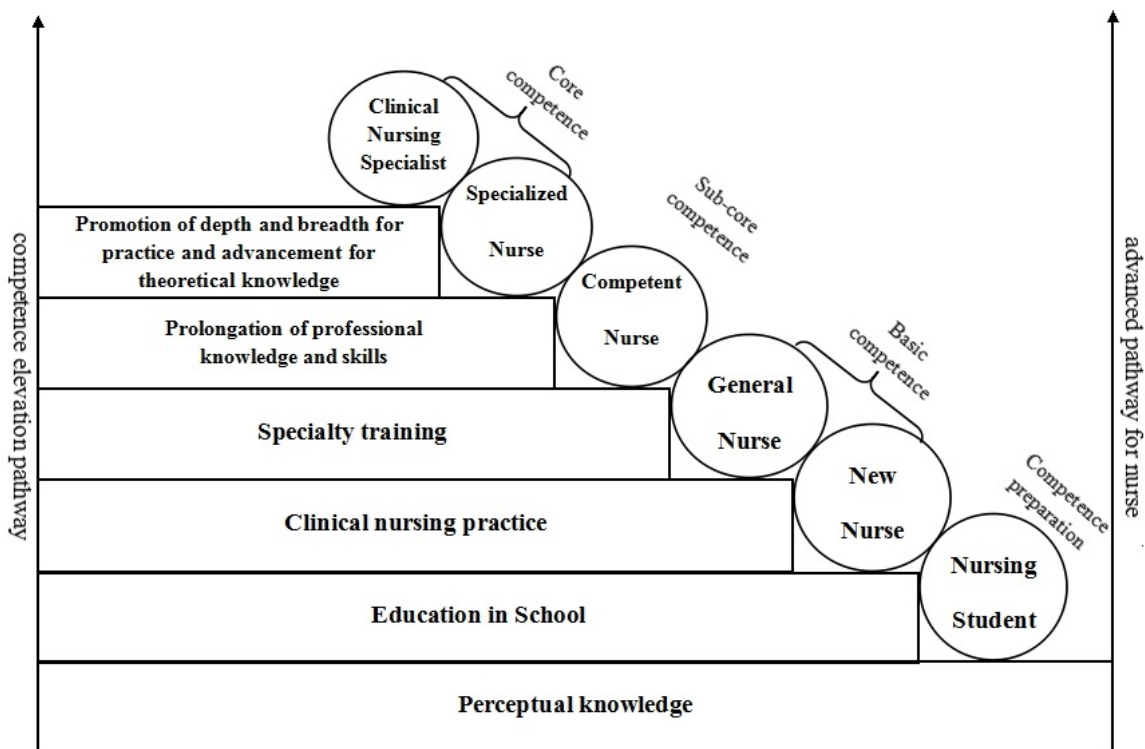


Fig. 1- Competence advanced model for OP specialized nurse

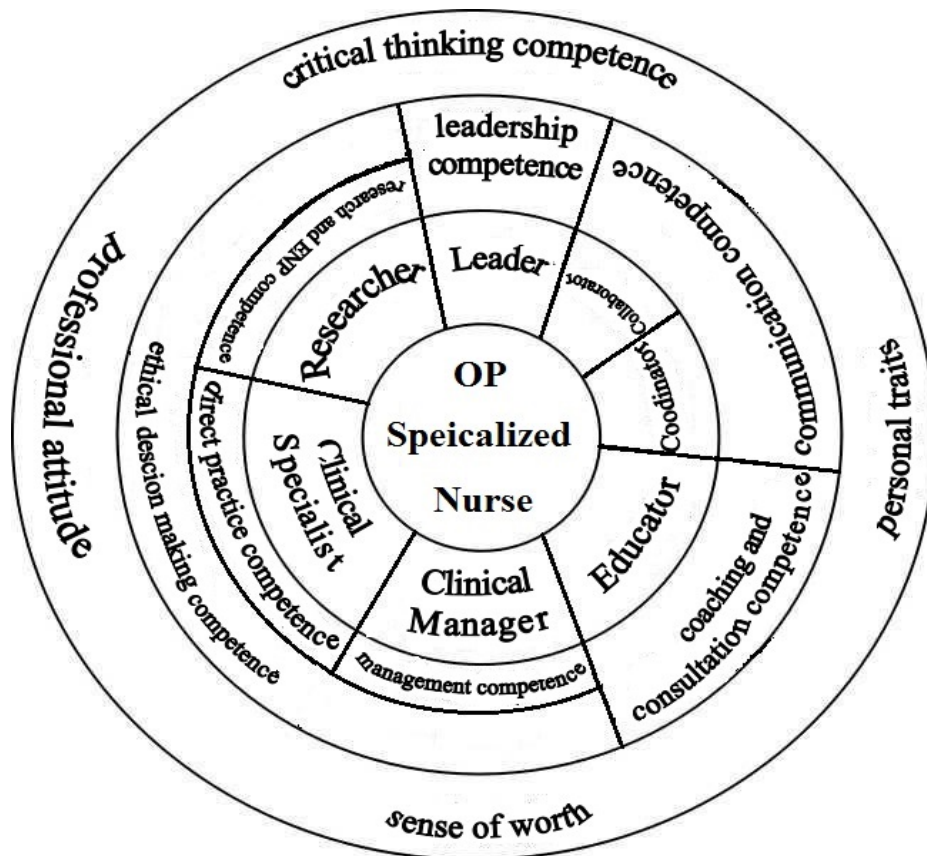


Fig. 2 - Roles-competences model for OP specialized nurse



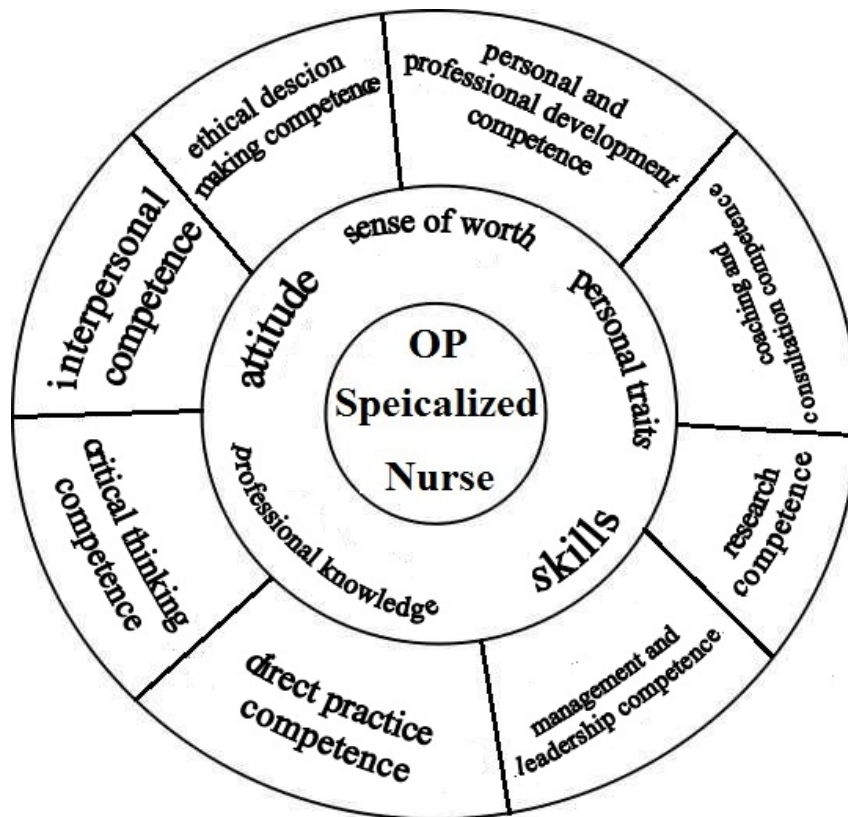


Fig. 3 - Core competence model for OP specialized nurse

**Roles-competences model for OP specialized nurse**

According to the core competence theory for specialized nurse, roles theory, literatures and theoretical analysis, a roles-competence model suitable for Chinese OP specialized nurse is initially established in nursing education and clinical nursing reality in China (Fig. 2). Roles for OP specialized nurse include clinical specialist, clinical manager, researcher, leader, educator, coordinator, and collaborator, and the role of abilities are direct care competence, management competence, research and evidence-based practice competence, education and coaching competence, inter-personnel communication competence, and leadership competence, respectively. Ethical decision making is a shared competence for clinical specialist, clinical manager, and researcher. Positive, correct, and a firm attitude, positive-going and ethical values,

flexible and rigorous way of thinking, and outstanding personality traits are the foundation of achievement of each role functions (Fig. 2).

**Core competence model for OP specialized nurse**

According to literatures and theoretical analysis, The concept of specialized nurse is defined as a register nurse who completed the basic theory learn, specified clinical practice, and received OP profession training, passed the examination qualified specialized accrediting agency, obtained specialty diploma for OP, and could offer high quality nursing service to clients. With the growing number of OP, the medical technique’s rapidly development and the increasingly complex and continuous environment of medical care, therefore, construction on core competence framework for specialized nurse is getting Significantly urgent. A

core competence model for Chinese OP specialized nurse, which includes 8 sections on direct clinical practice competence, critical thinking competence, inter-personnel relationship competence, ethical making competence, individual development competence, research competence, clinical management competence, and education and coaching competence, is built based on those above theories stated (Fig. 3). Four essential elements including personal attitude, academic knowledge, professional skills, and personal traits are fundamental connotation for core competence, and each role competence is derived from it.

- Direct practice competence: integrating contemporary nursing theories, research results, knowledge of clinical practice, and apply it into clinical nursing practice, direct interaction with patients, families, and groups of patients to promote health or well-being and improve quality of life, characterized by a holistic perspective in the advanced nursing management of health, illness, and disease states
- Critical thinking competence: finding solutions to solve clinical nursing problems exactly, and performing a purposeful, meaningful process of self-regulation and reflection in complex clinical conditions. This competence refers to some key skills including analysis, judgment, evaluation, logical reasoning, and prediction.
- Inter-personnel relationship competence: the ability to spend time with clients, general nursing staff, and others in clinical practice circumstance.
- Ethical decision making: identifying, articulating, and taking action with ethical concerns on the patient, family, healthcare provider, health care system, community, and public policy levels.
- Personal and professional development

competence: participating in professional training and conducting self-learning, gradually enhancing self profession level and growing a clinical nursing specialist, and eventually, promoting development of nursing discipline.

- Research and evidence-based practice competence: the work of thorough and systematic inquiry, which includes the searching, interpretation, and use of evidence in clinical nursing practice and nursing quality improvement, as well as active participation in the develop and conduct of research.
- Management and leaderships competence: the ability to manage change and empower others to influence clinical nursing practice, improve nursing quality, increase the satisfaction degree, and affect political processes both within and across systems
- Coaching and consultation competence: on the one hand, skillful guidance and coaching to advance the care of patients, families, groups of patients, and the profession of nursing, on the other hand, patient, staff, or system focused interaction between professionals in which the consultant is recognized as having specialized expertise and assists the consult with problem solving.

### **Conclusions**

The model is a preliminary core competence framework for Chinese OP specialized nurse, and the secondary and measurement indicators are still not determined. Next, the most important tasks are to explore specific connotation and inner interrelationship of these domains and indicators on the grounds of a combination of multi-dimensional scaling analysis, factor analysis, structural equation model, and expert consultation to analyze data from a questionnaire survey. Eventually, the core

competence evaluation indicators system for Chinese OP specialized nurse would be established to offer a reference for personnel selection, training, examination, and certification of OP specialized nurse in China.

### **Contributions**

(Note: Xu Tian and Li Ma are co-first author.(Dr. Tian and Dr. Ma contributed equally to this work)

Study design: Tian, X., Song, G. M.; data collection: Tian, X., Yi, L. J., Cao, H.; data analysis: Tian, X., Wang, Y.; manuscript preparation: Tian, X., Ma L.

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