Nurse Education Today 56 (2017) 6–12

Contents lists available at ScienceDirect

Nurse Education Today

journal homepage: www.elsevier.com/locate/nedt

# IFNA approved Chinese Anaesthesia Nurse Education Program: A Delphi method

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ARTICLE INFO

*Keywords:*
Anaesthesia
Education
Accreditation
International
China
Nurse
Standards

ABSTRACT

*Background:* Numerous nurses work in operating rooms and recovery rooms or participate in the performance of anaesthesia in China. However, the scope of practice and the education for Chinese Anaesthesia Nurses is not standardized, varying from one geographic location to another. Furthermore, most nurses are not trained sufficiently to provide anaesthesia care.

*Objectives:* This study aimed to develop the first Anaesthesia Nurse Education Program in Mainland China based on the Educational Standards of the International Federation of Nurse Anaesthetists.

*Methods:* The Delphi technique was applied to develop the scope of practice, competencies for Chinese Anaesthesia Nurses and education program. In 2014 the Anaesthesia Nurse Education Program established by the hospital applied for recognition by the International Federation of Nurse Anaesthetists. The Program's curriculum was evaluated against the IFNA Standards and recognition was awarded in 2015.

*Results:* The four-category, 50-item practice scope, and the three-domain, 45-item competency list were identified for Chinese Anaesthesia Nurses. The education program, which was established based on the International Federation of Nurse Anaesthetists educational standards and Chinese context, included nine curriculum modules. In March 2015, 13 candidates received and passed the 21-month education program. The Anaesthesia Nurse Education Program became the first program approved by the International Federation of Nurse Anaesthetists in China.

*Conclusions:* Policy makers and hospital leaders can be confident that anaesthesia nurses graduating from this Chinese program will be prepared to demonstrate high level patient care as reflected in the recognition by IFNA of their adoption of international nurse anaesthesia education standards.

## 1. Introduction

As professionals, anaesthesia nurse providers are recognized for their significant contributions to global health care (Henry and McAuliffe, 1999). The International Federation of Nurse Anaesthetists (IFNA) was established in 1989 (Caulk, 1998) and aims to develop and promote both educational and practice standards in the field of anaesthesia nursing (Caulk and Maree, 1990; Ouellette and Caulk, 2000). The IFNA has more than 40 country members and has been recognized by many international organizations, including the International Council of Nurses (Ouellette and Horton, 2011).

From 1992 to 1994, the IFNA supported a worldwide survey to determine countries where nurses are providing anaesthesia services. The survey indicated that nurses provided anaesthesia care in 107 countries (56.02%), with nurses assisting physicians to administer anaesthesia in nine countries (4.71%) (McAuliffe and Henry, 1996).

China was one of the 107 countries; however, the respondents from China commented, “As soon as a nurse begins to give anaesthesia, she [sic] changes her role to physician (McAuliffe and Henry, 1996).” The Chinese Ministry of Health prohibited administration of anaesthesia by nurses in 1989. At that time, all nurses working in the department of anaesthesiology became anaesthesiologists or left the department, and

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http://dx.doi.org/10.1016/j.nedt.2017.05.017
Received 6 June 2016; Received in revised form 8 May 2017; Accepted 30 May 2017

few departments of anaesthesiology utilized any nurses to deliver anaesthesia. However, more recently dramatic increases in anaesthesiologist workloads associated with the rapidly increasing rate of surgical procedures have increased the need for anaesthesia nurses in anaesthesiology departments.

Three studies investigated the number of anaesthesia nurses in different regions of China. In Shanghai, 19 of 26 teaching hospitals had anaesthesia nurses on staff, and the other seven wanted to establish such positions (Jiang et al., 2010). The number of anaesthesia nurses in Shanghai had expanded by 2.49 times in one year alone for the time period examined. In Shandong Province, 15 out of 46 hospitals had anaesthesia nurses, and the other 31 planned to establish anaesthesia nurse positions in three to five years (Lei Li, 2010). In Guangdong Province, 117 hospitals employed 505 anaesthesia nurses, and this number was planned to increase dramatically before 2010 (Xiuqin Chen et al., 2008).

Although large numbers of nurses work in the departments of anaesthesiology in Chinese hospitals, the nursing association and the government do not officially recognize the title of “Anaesthesia Nurse”. Most important, there is great variability in the education preparation of Chinese Anaesthesia Nurses, ranging from apprenticeships or “on-the-job-training” to three-year nursing technical schools focusing on anaesthesia (Hu et al., 2013). Drawbacks to these kinds of education include variable quality and consistency, limited impact on career advancement and lack of standards. Therefore, this study aimed to develop the first Anaesthesia Nurse Education Program (ANEP) in China, based on the IFNA Standards of Education.

## 2. Background

The practice and education of anaesthesia nurses may vary from one country to another and even from one geographic location to another within a country because of differences in the requirements or limitations imposed by local law or institutional characteristics (McAuliffe and Henry, 1998). There are wide variations in curriculum, length of program, faculty requirements and graduate qualification in different countries.

The education programs for anaesthesia nurses in the United States, France, and the United Kingdom represent three education models: middle-term graduate educational programs, middle-term continuing education programs and short-term continuing education programs (Wu et al., 2015). Education in America is the most developed model. There are over one hundred accredited graduate education programs in the United States and by the year 2025, standards mandate that all graduates reach the practice doctoral level (Hawkins and Nezat, 2009).

Believing that global healthcare could be improved by promoting international quality anaesthesia nurse education criteria for all programs in different countries, IFNA developed educational standards of education (Ouellette and Horton, 2011). The current version of these standards was updated in 2012 and includes nine topical outlines (IFNA, 2012).

To fulfill its mission to advance the quality of anaesthesia care by promoting educational standards, IFNA established an Anaesthesia Program Approval Process (APAP) in 2010 (Horton et al., 2014). The IFNA educational standards are applied as the yardstick to evaluate programs' success in facilitating quality care. For application, the education program designers submit their curriculum and related material in a written report to the IFNA Education Committee. If approved, the education program will receive an official certificate from the IFNA, and the information of the program will be posted on the IFNA's website (Horton et al., 2014; IFNA, 2015b). From 2010 to 2015, 18 anaesthesia programs in the world were approved by the IFNA (Horton et al., 2014; IFNA, 2015c).

## 3. Methods

### 3.1. Concept Definition

Because of the different national contexts and clinical focus, various terms are used in different countries to refer to anaesthesia nurses: certified registered nurse anaesthetists (CRNA), anaesthesia nurses and nurse specialists in anaesthesia. The term ‘Chinese Anaesthesia Nurses’ (CANs) was used in this study and is the professional title for the nurses in China working in anaesthesia with a specific anaesthesia education.

### 3.2. Theoretical Framework

Two frameworks of developing advanced-practice nurses guided this study (Brown, 1998; Bryant-Lukosius and Dicenso, 2004). The stakeholders (e.g., decision makers, experts and educators) and the environment (e.g., society, local health care conditions and professional nursing) constitute the multiple contexts of advanced-practice nursing development.

The central concepts of advanced-practice nursing are the activities, the competencies and the education. The domains of the activities comprise advanced clinical practice, management of health care environments and professional involvement in broad health care discourse. The competencies are the knowledge, skills and attitudes required in advanced practice to perform safely and effectively in the field. To acquire the competencies, advanced-practice nurses need to be educated through courses and clinical practice. Developing the education program for CANs in this study was not only based on the IFNA educational standard but also on the scope of practice and competencies for CANs, which were aligned within a Chinese context.

### 3.3. Study Design

This study included three stages: identifying the scope of practice for CANs, establishing the competencies and developing the education program (see Fig. 1). The Delphi technique was applied in the study, which consists of a series of sequential questionnaires to collect the opinions of a group of participants and then gain the most reliable consensus in each stage (Balasubramanian and Agarwal, 2012). The method is useful when the research question does not lend itself to objective techniques but can benefit from subjective judgments (Powell, 2003). The advantage of the Delphi method is that it achieves consensus in a given area of uncertainty or where there is a lack of empirical evidence, where participants are not influenced by one particular expert in the group, where feedback between rounds could stimulate new ideas and where there are few geographical limitations to recruiting various participants (Skulmoski et al., 2007). The Delphi method's use as a tool in the field of education has been well recognized (Foth et al., 2016; van Houwelingen et al., 2016); however, it has been criticized for a lack of methodological rigor due to the flexibility of its technique. Although no universal guideline exists, it is strongly recommended that key action steps be taken and reported clearly (Foth et al., 2016; Hasson et al., 2000).

#### 3.3.1. The Delphi Panel

A purposive sampling was used to recruit a panel of experts. All the participants are from the Chinese Anaesthesia Nurses Education Committee, which was established in 2009 and has 32 members. It is a heterogeneous panel, including health policy decision makers, nurse leaders, medical or nursing educators, anaesthesia nurses and anaesthesiologists. Therefore, the study benefitted from the diversity of participants' experience and opinions (Baker et al., 2006; Keeney et al., 2006). If the participants agreed to participate in the first study round, they were invited into the remaining rounds. The number of participants who took part in the first round and failed to fill out the questionnaires in the remaining rounds was counted as attrition. The