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Identifying essential infection control competencies for newly graduated nurses: a three-phase study in Australia and Taiwan

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SUMMARY

Background: Healthcare- and hospital-acquired infection increases patients' morbidity and mortality and increases healthcare costs. Infection prevention and control is a high priority for medical professionals in healthcare settings.

Aim: To identify essential infection prevention and control competencies for newly graduated nurses.

Methods: Three phases of research were designed: phase I, Instrument development, which was undertaken from January to May 2008; phase II, Expert panel identification, for which 122 experts were recruited, each nominated by presidents of infection control bodies and heads of nursing schools in Australia ($N = 60$) and Taiwan ($N = 62$); and phase III, Delphi surveys, which were conducted in three rounds simultaneously in Australia and Taiwan between July 2008 and May 2009.

Findings: Ninety-three experts returned the first questionnaire. Response rates of 76.2%, 91.4% and 94.1% were achieved in rounds I, II and III, respectively. Eighty experts participated in all three rounds. Overall, 81 items reached consensus, including seven in the competency area of basic microbiology, 12 in hand hygiene, 30 in standard precautions and additional precautions, 12 in personal protective equipment, nine in cleaning, disinfection and sterilization and 11 in critical assessment skills. The majority of experts ($N = 49$; 75.4%) agreed that infection control competency levels of newly graduated nurses were inadequate.

Conclusion: Eighty-one items of infection prevention and control specific to newly graduated nurses were identified by consensus between expert panellists from Taiwan and Australia. Baseline data from this study may help to develop undergraduate nursing curricula to facilitate nurses' clinical application of infection control principles.

Introduction

Healthcare-acquired infection, especially hospital-acquired infection (HAI), is a major public health concern throughout the global healthcare community. A growing body of literature shows that large numbers of hospitalized patients worldwide

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acquire infections during their hospital stays. In acute healthcare facilities of Australia, about 200,000 patients are diagnosed with HAI annually, representing 10% prevalence among all hospital patients.[1] HAI causes between 17,500 and 70,000 deaths of hospitalized patients each year in the USA.[2] In Scotland, about 33,000 hospital readmissions are reported due to HAI annually.[3] In Taiwan, about 2.5% of patients acquired infection while hospitalized in 2010.[4]

Increased risk of exposure to infectious diseases in all healthcare settings and high rates of HAI in particular have a direct impact on patient safety, contributing to unexpected patient deaths, placing patients and their families at increased risk of infection and increasing the burden of healthcare costs for hospitals and communities. Each year, an estimated US$4.5–5.7 billion are added to US healthcare costs due to adverse events from HAI.[5] Since infection increases both the morbidity and mortality of hospitalized patients as well as increasing healthcare costs, increasing awareness and practice of infection prevention and control becomes a high priority for medical professionals in healthcare settings.[6–8]

Nurses have major responsibility for infection prevention and control as part of their daily patient care activities. They play a major role in ensuring that appropriate practices are in place to meet the infection control standards in their institutions. Therefore, competency in infection control is a crucial component for implementing best practice for nurses to ensure patient safety and provide high-quality care. Competency is defined as professional development through education, referring to the ability to apply knowledge to practical situations.[9] In nursing, competence emphasizes the ability to perform specified activities within nursing practice, and infection control competence refers to the integration of knowledge, skills and behaviours for newly graduated nurses to perform safely in a healthcare setting following infection control standards.[10]

Strategies for prevention and control of HAI are continually being developed at local, national and international levels, emphasizing education and training.[11,12] In 2005, the Australian Nursing and Midwifery Council produced National Competency Standards for the Registered Nurse, basing competencies on skills, knowledge and attitudes believed necessary for safe, competent care.[13] In addition, the New South Wales (NSW) Nurses' Registration Act (2003) states that Australian nurses must comply with the infection control policies of the institutions where they are employed.[14] The infection control competency framework in the UK, which was developed in 2010, is part of the National Occupational Standards that describe the skills, knowledge and understanding needed to undertake specific tasks at a specific level of competency within nursing or other health sector professions.[15]

A solid knowledge of infection control is necessary to assist new nursing graduates to work as competent beginner practitioners within healthcare settings, including reducing risks for HAI and providing safer patient care by minimizing cross-infection between patients.[16–18] Education for healthcare practitioners is cited as an essential strategy for preventing, controlling and reducing the risk of infection.[19] However, nursing curricula frequently lack adequate infection control education. For example, an assessment of 80 new graduate nurses from 17 universities as they commenced employment found that they had inadequate knowledge of basic infection control practices.[14] Effective infection control practices should not only be a topic for nurses' in-service continuing education but also part of the essential knowledge and skills for pre-registration nursing programmes.

We hypothesized that a panel of experts experienced in infection control, including healthcare professionals and nursing educators, could identify essential core competencies of infection control for pre-registration nursing that would guide development of nursing curricula, and may help to establish infection control standards for nursing. Further, we thought that applying the Delphi research method, which generates opinions and facilitates consensus through successive rounds of questionnaires, would help establish consensus among the expert panel.[20,21] This study aimed to identify essential infection prevention and control competencies for newly graduated nurses. Results may help to develop undergraduate nursing curricula to facilitate nurses' clinical application of infection control principles. The study was conducted in Taiwan and Australia, seeking to obtain general and universal expert views that may be applicable globally.

Methods

Study design

Three phases of research were designed: phase I, instrument development; phase II, expert panel identification; and phase III, Delphi surveys. The instrument development phase was undertaken from January to May 2008. After the expert panel had been selected, the Delphi survey was conducted in three rounds simultaneously in Australia and Taiwan between July 2008 and May 2009. The research protocol and study instrument were approved by the ethics committees at the University of Wollongong, Australia, and all participants in Australia and Taiwan were informed accordingly.

Participants

A total of 122 experts were recruited, each nominated by the presidents of infection control bodies and heads of nursing schools in Australia ($N = 60$) and Taiwan ($N = 62$) to be members of an initial expert panel. Purposive sampling was applied to select experts who met the inclusion criteria (see 'Expert panel identification' below). Participation in this study was entirely voluntary. The project and the expectations and rights of participants were explained in information sheets provided when recruiting experts. Consent to participate was implied by the return of the first round of questionnaires to the researcher. The participants remained anonymous. No references to a specific panellist were noted in the study results and no information about the study will be published in any form that would allow any individual to be recognized; therefore, privacy and confidentiality were assured for each aspect of the study.

Phase I: survey instrument

For phase I, three steps were used to develop a round I questionnaire for the Delphi survey: (i) review of relevant literature via database search using the keywords infection, infection control, infection prevention, hospital-acquired infection, nosocomial infection, nursing, competency, etc.,