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Nurse practitioners versus doctors diagnostic reasoning in a complex case presentation to an acute tertiary hospital: A comparative study

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ABSTRACT

Background: Nurse practitioners perform a diagnostic role previously delivered by doctors. Multiple studies demonstrate nurse practitioners are as effective as doctors when managing chronic conditions and minor illnesses and injuries. No studies have focused on how nurse practitioners compare to doctors in their management of complex cases presenting for the first time.
Objective: This study assessed how nurse practitioners' diagnostic reasoning abilities when managing a complex case compared to those of doctors'?
Design: A comparative research design.
Participants: Purposeful sampling recruited 30 nurse practitioners and 16 doctors working in multiple specialties in New Zealand. All doctors were completing postgraduate specialist training programmes. Specialties included older adults, emergency care, primary health care/general practice, cardiology, respiratory and palliative care.
Methods: A complex case scenario assessed by an expert panel and think aloud protocol was used to assess diagnostic reasoning abilities. The ability of 30 nurse practitioners to determine diagnoses, identify the problem, and propose actions was compared to that of 16 doctors. Correct responses were determined by an expert panel. Data gained from the case scenario using think aloud protocol were quantified for analysis.
Results: 61.9% of doctors identified the correct diagnoses, 56.3% the problem and 34.4% the actions as determined by the expert panel. This compares to 54.7% of nurse practitioners identifying the correct diagnoses, 53.3% the problem and 35.8% the actions. Analysis revealed no difference between these groups (diagnoses 95% CI: −1.76 to −0.32, $p = 0.17$, problem $\chi^2 = 0.00$, $p = 1.0$, or actions 95% CI: −1.23 to 1.58, $p = 0.80$).
Conclusion: Nurse practitioners' diagnostic reasoning abilities compared favourably to those of doctors in terms of diagnoses made, problems identified and action plans proposed from a complex case scenario. In times of global economic restraints this adds further support to alternative models of care.

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What is already known about the topic?

- Multiple studies demonstrate nurse practitioners achieve similar patient outcomes to doctors.
- Most studies comparing nurse practitioner patient outcomes to doctors compare their management of chronic conditions and minor illnesses and injuries
- Few studies compare nurse practitioner diagnostic reasoning abilities to those of doctors.
- Most studies comparing nurse practitioner diagnostic reasoning abilities compare them to house officers.

What the paper adds

- Nurse practitioners analysis of a single complex case compare favourably to that of registrars in terms of diagnoses made, problems identified and action plans proposed from a complex case scenario.
- The findings of the study suggest nurse practitioners' diagnostic reasoning developed from education and experience enables them to diagnose and manage complex patients presenting for the first time.

1. Introduction

Nurse practitioners in New Zealand (NZ) were introduced to increase patients' access to healthcare, improve patient outcomes (Ministry of Health, 2002) and provide a solution to doctor shortages (Forde, 2008; Ministry of Health, 2009). Combining advanced nursing practice with skills from medicine, nurse practitioners diagnose, assess and manage patients and can order diagnostic tests and prescribe; historically these roles were considered exclusive to medicine (Forde, 2008; Ministry of Health, 2002). In addition nurse practitioners promote health, encourage self-care and look beyond the diagnosis to consider nonmedical interventions (Ministry of Health, 2002).

1.1. International differences in the use of the nurse practitioner title

There are international differences as to how the title nurse practitioner is used. Countries, such has NZ, Australia and the United States (US) have a rigorous assessment process and require a Master's degree (Carryer et al., 2007; Kleinpell et al., 2008). New Zealand and Australia and some US states allow nurse practitioners to practice independently without supervision from a physician (Carryer et al., 2007; Kleinpell et al., 2008; Lowes, 2014). The US recommend nurse practitioner education programmes move to a Doctorate degree by 2015 (American Association of Colleges of Nursing, 2012), however laws and regulations pertaining to nurse practitioner scope of practice (including prescribing authority) remain inconsistent from state to state (Poghosyan et al., 2012). In Canada, legislation, regulations and standardisation of the nurse practitioner title are in place in most provinces and territories (Sangster-Gormley et al., 2011) unlike the United Kingdom (UK) where no legislation protects the title nurse practitioner. Many nurses working in advanced nursing practice roles in the UK have a Master's degree but nurses are still able to do a one-week course and use the title advanced nurse practitioner (Coombes, 2008). Over recent years, the Royal College of Nursing has lobbied for a registered trade title for nurse practitioner similar to NZ (Coombes, 2008) but this has not yet occurred (Santry, 2010).

1.2. Nurse practitioner and physician patient outcomes

Multiple studies demonstrate nurse practitioners achieve similar patient outcomes to medical doctors (Dierick-van Daele et al., 2009; Horrocks et al., 2002; Laurant et al., 2008) however many of these studies focus on patients referred by the doctor to nurse practitioners for management of chronic conditions, patients presenting for the first time with minor illnesses or injuries, and nurse practitioners working alongside general practitioners (Horrocks et al., 2002; Laurant et al., 2008; Newhouse et al., 2011).

Few studies compare nurse practitioner diagnostic reasoning abilities to those of doctors. Sakr et al. (1999) showed UK emergency care nurse practitioners and house officers had similar rates of diagnostic error (9.2% compared to 10.7%) when assessing and treating patients presenting with minor illnesses and injuries (Sakr et al., 1999). This finding was further supported in a study of Dutch emergency care nurse practitioners and senior house officers; this study also found no difference in the rate of missed injuries and inappropriate management of patients presenting with minor illnesses and injuries (van der Linden et al., 2010).

In a study of UK primary care nurse practitioners and general practitioners, Offredy (2002) attributed the differences between the diagnostic accuracy of the two groups to general practitioners having more knowledge and experience than nurse practitioners. This was related to nurse practitioners' lack of familiarity with the case presentations due to the restrictions general practitioners placed on the type of consultations they performed. Although all the nurse practitioners in the study had completed the Royal College of Nursing nurse practitioner degree programme, their limited scope of practice means these results may not reflect the international context.

Whilst research demonstrates nurse practitioners compare favourably to doctors in their management of minor illnesses/injuries and chronic conditions, to the best of our knowledge no research compares nurse practitioners' and doctors' diagnostic reasoning abilities pertaining to a complex case.

1.3. Diagnostic reasoning theory

Familiar case presentations automatically use intuitive processing (Croskerry, 2009; Djulbegovic et al., 2012) which is developed through experience. It allows rapid diagnosis however it is influenced by environmental information, pattern recognition and the use of mental short cuts known as heuristics (Croskerry, 2009; Stanovich, 2010), which increase the risk of diagnostic error. If the patient presentation is not initially recognised, time permits or the clinician is uncertain, analytic processing