

Interprofessional Learning Between Pharmacy and Medicine Students

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Abstract

The care of multimorbid patients requiring multiple medications is increasingly common and necessitates a collaborative working relationship between healthcare providers. Healthcare students from different professional backgrounds are often brought together under the banner of interprofessional education in an effort to improve collaborative practice. However, the traditional relationship between medicine and pharmacy professionals which is characterised by a strong power differential, can impede collaborative learning and practice, and adversely impact patient care. Overall, a more detailed understanding of what pre-licensure pharmacy and medicine students think and experience in learning with students from the other professional group in the context of the power differential between these professions, is needed. This thesis is comprised of four manuscripts based on two qualitative studies and an analysis of the research process. The first study involved an analysis of students' reflective writing following interprofessional learning sessions. The second study explored students' perceptions of learning with another professional group. Study participants were students from undergraduate medicine and pharmacy programs at two universities who attended interprofessional learning workshops. Paper 1 presents a reflexive account of my PhD journey and highlights the psychological dissonance inherent in my transformative learning as a qualitative researcher. Paper 2 presents a critical reflection on student participation in educational research as prompted by the challenges encountered with participant recruitment for a planned quantitative study. Papers 3 and 4 report on the qualitative research data exploring the impact of traditional roles and professional identities of pre-licensure pharmacy and medicine students on learning together. Collectively, these papers highlight that while medicine and pharmacy students valued learning with and about each other, they were less likely to engage in co-constructing and sharing new meanings. Professional hierarchy was

strongly felt by the pharmacy students and although denied by medical students, was apparent in their reported behaviour and attitudes. Emerging professional identity and conceptualisation of future roles appears heavily influenced by a hierarchical relationship and poses a significant barrier to collaborative practice. However, students perceived that interprofessional learning can help them improve future practice and they were prepared to challenge traditional roles and power differentials. This thesis demonstrates that the traditional power relationship between the professions is present in the learning interactions between pre-licensure students. In order to provide a basis for meaningful collaborative practice, interprofessional education curricula need to challenge students' fundamental assumptions, beliefs and values about other professional groups and learning with, from and about other professions. Educators need to support students to recognise the structures that perpetuate the power differential between professions and question traditional roles and power differentials. However, for sustained change, this needs to occur beyond the classroom, and include reform of the structures that perpetuate the power differential between professions, both within educational institutions, healthcare institutions and the clinical environment.

Thesis Declaration

I certify that this work contains no material which has been accepted for the award of any other degree or diploma in my name, in any university or other tertiary institution and to the best of my knowledge and belief, contains no material previously published or written by another person, except where due reference has been made in the text. In addition, I certify that no part of this work will be used in a submission in my name in the future for any other degree or diploma in any university or other tertiary institution without the prior approval of the University of Adelaide and where applicable, any partner institution responsible for the joint award of this degree.

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Signed:

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Chapter 1. Introduction

1.1 Overview of Thesis

Capabilities for collaborative practice are one of the main educational outcomes for students of health professions. Interprofessional education is an obvious choice in developing these capabilities during undergraduate study, with the aim this will beneficially affect practice. Challenging students' understanding and values through interprofessional education creates the potential for meaningful learning and a positive change in attitudes. Sound interprofessional collaboration between pharmacists and medical practitioners is crucial to the delivery of safe, patient-centred pharmacotherapeutics. The role of both the pharmacist and medical practitioner has significantly changed in the last decade and continues to evolve. Polypharmacy and multimorbidity are increasingly common and the likelihood of drug interactions increases with multiple medications. A truly collaborative working relationship between pharmacists and medical practitioners has the potential to increase the optimal use of the expertise of both professions, resulting in a higher quality of patient care. However, in practice, most pharmacists are seemingly reluctant to question a medical practitioner's authority and will rarely offer an opinion about prescribing unless prompted. The tendency for pharmacists' perspectives to be unheard by medical practitioners may be due to the traditional unequal power relationship between the professions.

This thesis presents research which explored how pharmacy and medicine students perceive interprofessional learning in an undergraduate setting. I set out to utilise mixed methods to explore the impact of traditional roles and professional identities of these groups with regard to learning together. However, the methodological approach evolved through the research process. The value of reflexivity is highlighted in the presentation of my transformative learning as a qualitative researcher during my PhD journey. I initially

commenced my candidature at Flinders University and later transferred to University of Adelaide to allow me to pursue a thesis by publication.

This thesis is in publication format. It is comprised of a collection of papers arising from the research which have been either published or submitted for publication. There is a total of four papers and each of these forms a chapter. The first is a reflexive paper which outlines who I am and my journey in the educational paradigm and as a qualitative researcher. The second paper is a critical discussion of the challenges pertaining to the recruitment of participants for educational research, which is informed by the difficult experience of recruiting participants for an originally planned quantitative component of this research. The third paper explores how pre-licensure medical and pharmacy students perceived learning with another professional group and reports the results of students' written reflections. The fourth paper is an exploration of how the power differential between the two professions impacts on their ability to learn together and reports the results of interview data. The published manuscripts are included in Appendix 7.1. Presentations I gave during my candidature are listed in Appendix 7.2. In this introductory chapter I review the literature pertinent to the research topic under investigation and define the research questions and methods. In the concluding chapter I consider the strengths and weaknesses of the research methodologies employed, place the main findings of this thesis in the broader context of interprofessional learning, and make suggestions for future research.

1.2 Background

1.2.1 Interprofessional Education

The delivery of safe, high quality healthcare should be based on collaborative practice between different healthcare professionals (Rosen et al., 2018). There are many examples of grave errors that have been the consequence of a lack of collaboration (Reason, 2000). These include surgical adverse events, diagnostic errors and medication errors (Rosen et al., 2018). As a result, there is a growing focus on improving team communication in safety and quality literature aimed at reducing serious errors and fatalities (Thomas, 2011; Weller, Boyd, & Cumin, 2014). Frequently, when a healthcare team member adds a potentially valuable contribution to patient care, their perspective goes unheard or unspoken (Rosen et al., 2018). This represents a missed opportunity and remains a barrier to quality care (Bartunek, 2011; Olenick, Allen, & Smego, 2010). Since collaboration among health professionals is central to good healthcare, it is essential to ensure healthcare professionals are equipped with the knowledge, skills and capabilities to engage in collaborative practice with other professionals (Reeves et al., 2016a; World Health Organization, 2010). Healthcare education should deliver graduates who are work-ready collaborative interprofessional team members (The Training for Health Equity Network, 2011). They should commence work equipped with the necessary skills for team-based and patient-centred care.

One of the main outcomes of health professional education is for students to embrace and internalise the attributes and values of a healthcare professional (Cruess, Cruess, Boudreau, Snell, & Steinert, 2014). The development of professional identity is a complex process with many influences beyond the scope of health educators. These influences include family and societal views, even prior to entry into health professional education programs (Cavenagh, Dewberry, & Jones, 2000; Cruess, & Cruess, 2012). Socialisation into the professional role occurs through the educational institution and the clinical environment,

which includes the hidden curriculum (Hafferty & Castellani, 2009; Hafferty & O'Donnell, 2014). The hidden curriculum refers to the implicit and unacknowledged yet powerful learning that occurs alongside formal education (Hafferty & Franks, 1994; Hafferty, 1998; Hafferty & Castellani, 2009). In particular, norms, values and beliefs are often conveyed in the hidden curriculum. A student's attitudes and values held as part of an emerging professional identity include those that will impact on interprofessional learning and collaboration (Baker, Egan-Lee, Martimianakis, & Reeves, 2011).

There is a large body of literature on interprofessional education including journals specifically dedicated to the topic, such as 'Journal of Interprofessional Care' and 'Journal of Research in Interprofessional Practice and Education'. The demand for this research and writing is fuelled largely by the drive to improve patient care. Thus interprofessional education is positioned between the paradigms of health professions education and safety and quality. The link between collaborative practice and better patient outcomes is underpinned by evidence (World Health Organization, 2010).

Evolution of terminology

The term 'interprofessional' appears in literature from the 1970s and earlier (Barr, 1996). In previous papers, the language used to describe what is now labelled interprofessional learning and practice included terms such as 'interdisciplinary' or 'team approach'. The team approach to healthcare was seen as a cost-effective way of providing community-based healthcare to disadvantaged populations (Baldwin, 2009). 'Team' is a term still in common use to describe a group of healthcare workers from multiple professions caring for the same patient(s). However, it may also be used to describe a uniprofessional group. As an example, the doctors in a hospital working on a particular service are often referred to as the 'medical team'.

The term interprofessional education is usually reserved for formal occasions of learning between different professions. Despite its presence in literature over many years, definitions of interprofessional education vary widely in the literature, and the different conceptualisations and terminology have been problematic in the comparison of interventions and research (Reeves et al., 2011). The definitions most commonly used specify that at least two professional groups come together for learning and that the learning itself includes more than a common topic or subject matter (Australasian Interprofessional Practice and Education Network, 2011; Barr, Helme, & D'Avray, 2014; Freeth, Hammick, Reeves, Koppel & Barr, 2005; Nisbet, Lee, Kumar, & Thistlethwaite, 2011). The definition adopted in this thesis is: "Interprofessional education occurs when students from two or more professions learn about, from and with each other to enable effective collaboration and improve health outcomes" (World Health Organization, 2010, p.7). Adopting this definition requires considerable resources, effort and planning in order to meet all of these conditions (Cooper, Carlisle, Gibbs, & Watkins, 2001). This definition also excludes many types of less resource-intensive learning involving other professions, for example, lectures from faculties of different professions and students from different professions learning in the same classroom without interaction or reflection (Buring et al., 2009). Although the term 'student' implies an undergraduate learning environment, the terminology is intended to be inclusive of education both before and after graduation (Barr et al., 2014).

Less commonly used definitions of interprofessional learning include those excluded by the definition presented earlier. Examples are content presented from the viewpoint of a different professional group and different professional groups learning the same content but without the aim of collaboration. The term 'multiprofessional learning' has been used by some authors to distinguish learning involving multiple professional groups which does not have the aim of promoting collaborative practice (Cooper et al., 2001). 'Multiprofessional' is

sometimes used to mean an activity involving more than two professions, but in reality ‘interprofessional’ more commonly refers to learning involving more than two professional groups. ‘Multidisciplinary’ is often used interchangeably with ‘interprofessional’ with several different definitions existing in literature . Most consistently it is used to refer to activities or teams involving members representing different health and social care professions who work closely together but may not collaborate (Atwal & Caldwell, 2006). Some authors refer to member contributions to patient care as complementary (as distinct from collaborative) in multidisciplinary settings (Chamberlain-Salaun, Mills, & Usher, 2013). However, ‘multidisciplinary’ may also be used to refer to differing branches of one profession or different academic disciplines (Leathard, 2002).

More consistent definitions have evolved over time and interprofessional learning can be seen as the umbrella term that includes formal interprofessional education (before and after licensure) and interprofessional practice in both an academic and workplace sense, which also includes spontaneous learning in the workplace (Nisbet et al., 2011). Thus, interprofessional learning spans the entirety of the continuum of lifelong learning for healthcare providers and is the perspective adopted in this thesis, with interprofessional education used to refer to planned learning and teaching activities. Collaborative practice is regarded as the main aim of interprofessional learning. The definition of collaborative practice adopted in this thesis is “planned, purposeful and concerted action within and between professions, within and between organisations, with service users, carers and communities to improve care, services and safety” (Barr et al., 2014, p. 4). This definition specifies a patient-centred outcome and encompasses the breadth of interactions that are required of a health professional. It also urges deliberate and planned actions.

Evidence for the efficacy of interprofessional education

Research is essential in advancing the practice and understanding of interprofessional education. Given the barriers to implementation of interprofessional education and the resourcing implications, evidence is needed to demonstrate efficacy and support ongoing program delivery. Despite a growing evidence base, the delivery of health education to professionals exists in a changing societal and clinical environment. Furthermore, educators continue to experiment with the components of interprofessional education, including modes of delivery and the people involved. There have been several systematic reviews to evaluate the efficacy of interprofessional learning relating to health professions. These reviews have included randomised controlled trials (administered before and after studies), interrupted time series, and have examined a variety of clinical practice outcomes (Reeves, Perrier, Goldman, Freeth & Zwarenstein, 2013; Reeves et al., 2008; Zwarenstein et al., 1999).

Many of these reviews have focussed on evidence constructed in the form of pre- and post- intervention studies. The first Cochrane review concluded a lack of robust quantitative evidence for the efficacy of interprofessional education in improving collaboration and patient outcomes (Zwarenstein et al., 1999). However, the reviewers concluded that this did not imply that interprofessional education was ineffective. Subsequent reviews have broadened the scope to include learners' attitudes and behaviours, and also include qualitative and mixed methods research utilising measures better suited to the evaluation of educational outcomes, although still preferencing randomised controlled studies as providing more rigorous and generalisable evidence (Hammick et al., 2007; Lapkin, Levett-Jones, & Gilligan, 2013; Reeves et al., 2008; Reeves et al., 2013).

Studies examining post-intervention educational outcomes data commonly pertain to learners' reactions (for example, self-reported learner satisfaction on a survey) (Reeves et al., 2016a). This is referred to as a level one outcome, according to the adapted Joint Evaluation

Team (JET) model of interprofessional outcomes (Barr, Koppel, Reeves, Hammick, & Freeth, 2005). This model is based on the Kirkpatrick framework for evaluation of training (Kirkpatrick & Kirkpatrick, 2006) and has been specifically modified for interprofessional learning (Thistlethwaite, Kumar, Moran, Saunders, & Carr, 2015). Evaluation of interprofessional learning in Australia is predominantly based on this framework (Dunston et al., 2019). The framework has four levels, ranging from learners' reactions (level 1), changes in learners' attitudes, knowledge and skills (level 2), behavioural change (level 3), through to changes in organisational practice and benefits to patients (level 4). The emphasis on level one outcomes in research is understandable as these are easily measurable in the short-term, whereas other outcomes are more difficult to measure and would require longer-term follow-up and more resource-intensive collection methods.

Although it appears logical that effective interprofessional learning should enable effective collaborative practice, research linking interprofessional education and health outcomes is more challenging. The quest to provide evidence related to the quality of healthcare delivery spans many years and involves many scholars and practitioners, yet remains limited (Reeves et al., 2013; Reeves et al., 2016a; Reeves, Palaganas, & Zierler, 2017). When examining interprofessional learning from an educational perspective, different types of evidence and focus may be required. Rather than patient outcomes (which may be less relevant at a student level), educators can benefit from a nuanced understanding of how students can be brought together to enable effective learning and the development of capabilities for collaborative practice.

Early interprofessional education research typically involved participants from medicine and nursing programs (Hammick et al., 2007). These groups still dominate but participation has now expanded to include other health professions, including social work, physiotherapy, midwifery and pharmacy (Barr et al., 2014; Reeves, Tassone, Parker, Wagner,

& Simmons, 2012). Research is most likely to include post-licensure learners when examining the outcomes related to service organisation and delivery, whereas studies involving pre-licensure participants look at preparation for collaborative practice through acquisition of knowledge, skills and attitudes (Reeves et al., 2012). This pertains to level two in the adapted JET model, that is, evidence of learning by demonstration of change in knowledge, skills or attitudes (Barr et al., 2005).

Interprofessional education has frequently been employed as a means to improve service delivery and practice development, often in the form of quality improvement initiatives (Hammick et al., 2007; Reeves, 2001). Change in organisational practice is often assumed likely to have impact on patient outcomes, although this is extrapolation rather than evidence. Nevertheless, evidence of organisational impact has been demonstrated, for example, the increase in the use of clinical practice guidelines, development of better support systems for staff, improved department culture, reduced clinical error rates, and cost savings resulting from improved collaboration between team members (Reeves et al., 2013; Reeves et al., 2016a). These changes in behaviour pertain to level three in the adapted JET model – the application of learning (Barr et al., 2005). Interprofessional education interventions studied are often short-term (commonly between 2–7 days) (Reeves, 2001; Reeves et al., 2010; Reeves et al., 2012). Hospital and community practice were equally represented in past reviews of published studies (Freeth et al., 2005; Reeves et al., 2010), whilst more recent reviews have commented on a greater proportion of hospital based studies (Kent & Keating, 2015) (although this may vary depending on the inclusion criteria for review).

Impact of interprofessional education on learners

Evidence from multiple reviews has shown that interprofessional learning is well- received by learners (Lapkin et al., 2013; Reeves et al., 2013; Reeves et al., 2016a). Students rate interprofessional education as a positive experience, they express a desire to

collaborate and perceive that interprofessional education is worthwhile (Lapkin et al., 2013; Reeves et al., 2016a), however, the detail around why they feel this way is often less clear. Interprofessional learning also enables the knowledge and skills for collaborative practice (Reeves et al., 2017). In many studies interprofessional learning appears less able to influence learners' attitudes and perceptions of other professional groups (Hammick et al., 2007). Later reviews have been more encouraging about the ability of interprofessional learning to influence pre-licensure students' attitudes and perceptions towards interprofessional collaboration and other professions (Reeves et al., 2016a). Lapkin et al. (2013, p. 90) state that "students' attitudes and perception toward interprofessional collaboration and clinical decision-making can be potentially enhanced through interprofessional education". However, authors also raise doubts about these changes being sustained over time, noting that there are few longitudinal or follow-up studies (Lapkin et al., 2013). Attitudes were shown to improve with interprofessional learning but returned to baseline in one pre-licensure study (Bradley, Cooper, & Duncan, 2009). A study spanning several Australian Universities found new pharmacy medicine and nursing graduates had little understanding of the roles of other health professions, despite interprofessional education in their programs (Ebert, Hoffman, Levett-Jones, & Gilligan, 2014)

In systematic reviews the majority of studies report positive or mixed outcomes of interprofessional learning. There are some reports of no impact on either professional practice or patient care (Reeves et al., 2013; Reeves et al., 2008). However, the lack of negative or neutral findings in the literature may be as a result of publication bias and has been duly noted by authors in the field (Lapkin et al., 2013). Publication bias is not unique to interprofessional education, risk factors include a lack of significant results (DeVito & Goldacre, 2019). There are a limited number of studies that show negative outcomes such as an increased resistance to working interprofessionally associated with interprofessional

learning (Clifton et al., 2007). In other settings an increase in prejudice has also been observed following contact between different groups (Pettigrew, Tropp, Wagner, & Christ, 2011).

Medical students are often found to have lower scores on validated survey instruments such as the Readiness for Interprofessional Learning Scale (RIPLS) (Parsell & Bligh, 1999) and Interdisciplinary Education Perception Scale (IEPS) (Luecht, Madsen, Taugher & Petterson, 1990) than pharmacy students around attitudes to interprofessional collaboration and teamwork (Hattingh, McGuire, & Rogers, 2010; Horsburgh, Lamdin & Williamson, 2001; Maharajan et al., 2017; Zaudke, Paolo, Kleoppel, Phillips, & Shrader, 2016). This baseline difference in attitudes may reflect the strong in-group identification of medical students. Nevertheless, a positive shift in attitudes toward collaboration is described in studies of interprofessional learning between these two groups (Greene, Cavell & Jackson, 1996; Van Winkle et al., 2012). Positive shifts in scores following interprofessional education interventions using RIPLS has also been demonstrated (Hattingh et al., 2010; Van Winkle et al., 2012) suggesting contact is useful in changing attitudes, at least in the short-term.

Evidence of impact on healthcare outcomes is not often sought or measured directly by education providers (Reeves et al., 2013). There are multiple reasons for this, including lack of alignment between healthcare and education systems, lack of resources, less relevance to students and time constraints (Cooper et al., 2001; Cox, Cuff, Brandt, Reeves, & Zierler, 2016). However, the assumption that providing effective interprofessional education will produce better patient outcomes is derived from evidence of such interventions enabling effective collaboration and extrapolating further, since collaborative practice has been shown to lead to better patient outcomes (Reeves et al., 2013). These patient outcomes include higher quality care, lower rates of error, lower costs of care, and a reduced length of hospital stay (Brashers, Phillips, Malpass, & Owen, 2015; Reeves et al., 2013). However, some

authors have argued that improved patient outcomes may not necessarily follow and to discuss interprofessional education and interprofessional collaboration together is a conflation that implies a causality that may not exist (Kuper & Whitehead, 2012). The quality of evidence for outcomes has also been questioned with criticisms ranging from inadequate descriptions of educational interventions, inadequate control for other variables, inadequate timelines to document sustained changes (Brashers et al., 2015; Reeves et al., 2013).

Quality in interprofessional education research

Early systematic reviews on the effectiveness of interprofessional learning focused heavily on quantitative research studies and faced limitations as a result. In particular, quantitative research does not offer insights into how interprofessional learning affects learners and in what context (Reeves et al., 2008; Zwarenstein et al., 1999). In contrast, qualitative methods may offer greater depth and understanding of a complex intervention and are better suited to provide a more profound understanding of the complex educational environment (Regehr, 2010; Tekian, 2014). The depth of understanding afforded by qualitative research is crucial in relation to interprofessional learning with richly detailed descriptions of interventions and settings being necessary for translating evidence into practice and determining the impact of this educational paradigm in different contexts and with different groups. The dominance of quantitative research poses a challenge in a field where qualitative methods are more appropriate for enhancing aforementioned understanding.

There is a clear bias in published literature toward quantitative outcomes data. In 2011, qualitative research articles comprised 9% of major health services and management journals (Weiner, Amick, Lund, Lee, & Hoff, 2011). Qualitative methodology also lacks prominence in health professions education curricula which means less exposure during pre-licensure study (Willig & Rogers, 2017), contributing to and perpetuating this quantitative

dominance. However, there is a growing recognition of the merits of qualitative research in health and education (Bolderston, 2014; Willig & Rogers, 2017). Some maintain that there has been a 'hidden' qualitative element to much research where data collected goes unreported or is not explicitly reported (c, 2011).

The paradigms that underpin these methodologies are distinct, with different approaches to data collection, analysis, measures of quality and assessment for rigour (Castillo-Page, Bodilly, & Bunton, 2012; Frambach, van der Vleuten, & Durning, 2013). In quantitative and mixed methods research, an adequate number of participants is required to achieve the statistical power to demonstrate a difference, plus sampling should be representative of the group studied to ensure generalisability (Castillo-Page et al., 2012). In many qualitative designs, sufficient data must be collected and analysed to achieve saturation (Braun & Clarke, 2019; Frambach et al., 2013). Retention of participants is crucial in longitudinal studies and in many instances a wide selection of participants is valuable to ensure transferability of qualitative results (Walsh, 2013).

Authors have questioned the validity of educational research in light of poor participation rates (Callahan, Hojat, & Gonnella, 2007; Sarpel et al., 2013; Walsh, 2013). The high rate of withdrawal in longitudinal studies raises the question of bias and throws into question the ability of authors to draw conclusions. Similarly, the restriction of educational research and program evaluation to those students who volunteer may limit the credibility and usefulness of results. Researchers may attempt to address these issues, for example, by including a description of pre- and post- intervention participants in order to allow the reader to better assess potential threats to validity and transferability (Walsh, 2013). Nevertheless, concerns about applicability (transferability of qualitative and generalisability of quantitative data) remain. Challenges with recruitment in all studies involving human participants are frequently mentioned in published studies and many studies report a failure to achieve their

recruitment targets (Walters et al., 2017). In research involving university students, participation rates of one third and attrition rates of 20% are not uncommon (Cyr, Childs, & Elgie, 2013). It is important to note that studies which fail to attain the numbers needed are unlikely to be published, thus learning from their experience is not possible which is unfortunate.

Many different theories have been used to frame interprofessional learning. The context and process of interprofessional learning necessitate the use of theories from the fields of psychology and sociology which describe group interaction and human behaviour (Hean, Craddock, & O'Halloran, 2009). However, much published research has been performed without a clearly articulated theoretical framework, which has led to criticism by some (Hean, Craddock, & Hammick, 2012; Reeves & Hean, 2013). Recent debate has centred on the need to establish the element of curriculum to which the theory needs to be applied (Hean et al., 2018). Furthermore, it has been expressed that better articulation and application of theory is needed in interprofessional learning research (Hean et al., 2018). A method of evaluating interventions which acknowledges the complexity of a real-world setting - where many other contextual factors influence learning outcomes - is ideal for interprofessional learning. One example is 'Realist Evaluation' which utilises mixed methods of data collection (Hewitt, Sims, & Harris, 2012). Realist evaluation acknowledges that the effectiveness of a program is not explained by a simple cause and effect model and uses a framework to analyse complex interventions, asking "what works, for whom, and in what circumstances?" (Thistlethwaite et al., 2015, p. 5).

It is clear that much of the research in interprofessional education has gone unpublished (Swanwick, Forrest, & O'Brien, 2019). There are likely multiple reasons for this, including overall high rates of rejection by journals. In the past, poor quality has been identified as a reason for rejection of articles submitted (Bordage, 2001). This may be due to

the fact that biomedical research has traditionally been quantitative, and researchers may be less familiar with the qualitative paradigm (Kuper, Reeves, & Levinson, 2008; Greenhalgh et al., 2016). However, this does not account for the so-called ‘file-drawer problem’ (Rosenthal, 1979 p. 638), where research does not even reach the point of submission (Song, Hooper, & Loke, 2013). The emphasis on qualitative methodologies may also have a role, since qualitative papers are much less likely to be published than quantitative papers (Greenhalgh et al., 2016), although worthy of note there has been an exponential increase in interprofessional education publications since the mid-2000s (both qualitative and quantitative) (Paradis & Whitehead, 2015).

The distinction between educational research and program evaluation is frequently blurred by educators and researchers (Regan, Baldwin, & Peters, 2012). Nevertheless, both may provide valuable insights into learning and educational outcomes and contribute to the development of interprofessional education. Evaluation of teaching through student feedback is becoming increasingly widespread in tertiary education. For academic staff, these evaluations are used as evidence for promotion, despite the fact that these evaluations are fraught with methodological weaknesses, including issues with participation rates (Adams & Umbach, 2011; Hornstein & Law, 2017; Uttl, White, & Gonzalez, 2017). As major stakeholders, there is a need to involve health professional students in both evaluation and research with regard to pedagogical innovations and curriculum innovations (Frenk et al., 2010).

1.2.2 Interprofessional Education in Pre-Licensure Curricula

The aim of interprofessional education is to develop the required skills, knowledge and attitudes for collaborative interprofessional practice, often referred to as ‘competencies’ (Thistlethwaite et al., 2014). The competencies required for interprofessional collaborative practice have been defined in several commonly cited interprofessional competency

frameworks (Brewer, 2011; Canadian Interprofessional Health Collaborative, 2010; Interprofessional Education Collaborative Expert Panel, 2011). Although these frameworks are constructed somewhat differently, they encompass a number of common domains including values and ethics for interprofessional practice, roles and responsibilities, interprofessional communication, and teamwork/group processes. Within the scope of collaborative practice is the central theme of patient-centred care and there are underpinning concepts such as mutual respect, common language, reflection, collaborative leadership and constructive approaches to conflict resolution. Many of these frameworks have utilised the term ‘competencies’. However, there has been a move from the use of this term toward ‘capabilities’, given that this alternative term implies ongoing potential for growth and development (Jorre de St Jorre & Oliver, 2018) which is more appropriate for health professions where lifelong learning is aspired.

Implementation of interprofessional education in pre-licensure curricula

In many pre-licensure programs, it is intended that interprofessional capabilities are learnt during clinical attachments. This is often assumed to occur with exposure to role modelling of team-based care and student participation in team meetings, ward rounds and other team activities (Brewer & Jones, 2013; O’Keefe, Burgess, McAllister, & Stupans, 2012). As with other aspects of the curriculum, the need for formal instruction in interprofessional learning, in parallel with clinical experience, is recognised (Poore, Cullen, & Schaar, 2014). However, despite institutional support at policy level (World Health Organization, 2010), the implementation of formal interprofessional education is often lacking in health professions curricula (Lapkin, Levett-Jones, & Gilligan, 2012; The Interprofessional Curriculum Renewal Consortium, 2014).

Some authors have described ways in which professional inclusivity assists students to develop their identity (Weaver, Peters, Koch, & Wilson, 2011). This often occurs during

clinical placements where students are supported to feel they are part of the team and are treated as future clinicians by patients and other health professionals. There is little doubt that the significant amount of time spent with other professions in the health settings through clinical placements has a major impact on students' development of professional identity and sense of worthiness. Students are frequently positive about the experience gained on clinical placement and will show enthusiasm for their studies. They appreciate the opportunity to be involved and to apply some of the knowledge and practise skills they have learnt. Unlike their attitude to the affective and reflective aspects of curriculum, most students highly value the practical experience of clinical attachments, even though this also has a large affective component through interaction with patients, peers and senior clinicians (Wilson, Cowin, Johnson, & Young, 2013). In pharmacy programs, experiential learning around identity is increasingly recognised as important but shortage of clinical placements may result in variable opportunities for students (Mylrea, Sen Gupta, & Glass, 2017).

Much of the interprofessional literature pertaining to pre-licensure students involves medicine and nursing, although pharmacy is also represented (Lapkin et al., 2013). Key components of effective interprofessional learning include adherence to the principles of adult learning, provision of a safe environment for challenge and growth, and authenticity of the learning experience (Reeves et al., 2016a). The inclusion of interprofessional learning in pre-licensure health professions curricula consists of both formal interprofessional education and less formalised learning opportunities in the clinical placement setting (Nisbet, Lincoln & Dunn, 2013). Formal interprofessional education takes different forms with simulation and case-based learning being popular modes of delivery (Guraya & Barr, 2018). Simulation involves creating an authentic healthcare scenario to allow the demonstration and deliberate practice of skills and knowledge. This can take many forms and may use actors (e.g. simulated patients) and models (mannequins and task trainers) or a combination of both

(Weller, Nestel, Marshall, Brooks, & Conn, 2012). Simulation is a teaching modality that lends itself to teamwork and interprofessional participation. Case-based learning is a form of inquiry-based learning that involves the use of specific healthcare scenarios that resemble real-world examples. Students can apply their knowledge and explore the skill set of another professional group in solving problems and understanding the case (Thistlethwaite et al., 2012).

Other modes of delivery include online collaboration with students from other professional groups and learning in clinical settings. For learning in the clinical setting, observation alone is insufficient, and students need to participate actively in interprofessional teams (Thistlethwaite et al., 2014). Although students from different programs may also attend common lectures or seminars (with students from other professions) and sessions to learn about other professions, these modes do not fit the definition of interprofessional learning adopted in this thesis (World Health Organization, 2010). In formal sessions, facilitators may include a wide range of educators from the students' programs and health professional educators specialised in the delivery of interprofessional learning, as well as patients and simulated patients in some instances. Similarly, the people involved in the development of interprofessional education is broad and may include students as co-creators (Abu-Rish, Kim, Choe, Varpio, & Malik, 2012).

Effective interprofessional education has some key components, including teacher characteristics, learner characteristics, settings and resources. Characteristics of teachers have been identified as important for effective interprofessional learning, including competence and confidence in small group facilitation and the ability to manage interprofessional friction (Reeves et al., 2016a). An ability to foster an environment that builds trust and care is also fundamental for a transformative learning environment where views and perceptions can be challenged (Kitchenham, 2008). Some have suggested the responsibility for optimal learning

conditions is shared by learners and teachers (Cook-Sather, Bovill, & Felten, 2014). Role modelling by teachers can be a powerful way to set the scene, demonstrating professional behaviours such as openness, willingness to learn and reflective practice (Passi et al., 2013). Teacher enthusiasm and knowledge of the relationship between professions has been identified as imperative and staff training and development are key to develop these facilitation skills (Reeves et al., 2016a).

Authenticity is frequently cited as important in interprofessional learning and this likely relates to the need for the learning to be viewed by learners as having direct relevance to current or future practice (Oandasan & Reeves, 2005). This may be achieved through simulation, actual clinical settings, or problem solving with cases (Brock et al., 2013). Unless a formal educational experience is authentic there may be unnecessary tension between the deliberate educational messages and what is learnt in the clinical setting. In the context of this mismatch, undermining by the hidden curriculum is likely to be greater (Holland, 2002). Importantly, authenticity will be different in each context and therefore tailoring a program to the local conditions is necessary to provide this element of interprofessional learning. It is unlikely that collaborative skills will be learnt through the passive experience of didactic lectures alone as students need to experience and practice them with one another (Bridges et al., 2011; Dunston et al., 2019; Selle, Salamon, Boarman, & Sauer, 2008).

Interprofessional learning is often not associated with formal assessment or academic credit (Dunston et al., 2013, Dunston et al., 2019). The degree of compulsion to attend interprofessional learning in pre-licensure curricula is also variable (Hammick et al., 2007). This may influence how learners perceive the value of interprofessional learning. For example, medical students are less likely to spend time on a learning activity that is not assessed or optional (Cooke, Chew-Graham, Boggis, & Wakefield, 2003). The potential hidden curriculum message of optional or non-assessed activities is that they are of less

importance or value.

There are mixed views on whether formal interprofessional education sessions should be compulsory in health professional education programs (Hammick et al., 2007; Reeves et al., 2016a). However, the most compelling reason cited to make sessions compulsory is the impact that this has on student perception of the importance of the activity. Similarly, a lack of assessment of interprofessional learning implies a lesser value of this type of learning (Dunston et al., 2019). Lack of assessment is classified as an omission in the hidden curriculum and sends a powerful message of devaluation (Hafferty, Gaufberg, & O'Donnell, 2015). Some authors have noted the positive impact of social interactions on interprofessional workplace interactions (Hammick et al., 2007; Nisbet et al., 2013), although it has been mentioned that these opportunities tend only to be accessed by students interested in learning about another profession (Morison, Boohan, Jenkins, & Moutray, 2003).

Socialisation into the health professions

Many authors draw a distinction between socialisation and training. Training can be defined as acquisition of knowledge and skills whereas socialisation involves transformation of one's own beliefs and values (Cruess et al., 2014). Although reflection is key to transformation, the repeated playing of a role will arguably help move an individual toward being in that role and the long duration of programs like medicine and pharmacy seem to rely on this (at least in part). Some authors would dispute that the repetition is sufficient and suggest that reflection is critical and without it, personal identity transformation cannot occur (Wald, 2015). However, it is possible to foster reflection and transformation through guided reflection, personal narratives and sharing in communities of practice (Steinert, Cruess, Cruess, Boudreau, & Fuks, 2007). In this model, a student starts as a relative outsider on the fringes of a community of practice. As they learn, they move toward the centre, and during this process their contributions to the healthcare team increase. Their practice gains greater

accountability and they develop a deeper sense of professional identity (Wilson et al., 2013). Development of professional identity is a transformational process, whereby a learner uses experience, interaction and reflection in the process (Gleeson, 2010).

Education is a part of the process of socialisation for students of health professions and is intended to transform individuals into health professionals. It does not occur in a vacuum and thus needs to take account of external influences (Hafferty & Franks, 1994). A good knowledge of the historical relationship between professional groups has been cited as an important teacher attribute (Oandasan & Reeves, 2005), as it may give the teacher a greater appreciation of the wider context of professional roles and societal perceptions and enable them to explore issues of similarity and difference between the groups. Similarly, an understanding of students' current work and learning environments is paramount (Holland, 2002; Reeves et al., 2016a). For learning between professions in a clinical setting or similar authentic simulated experience, educators and clinicians from different professions need to model respectful partnerships and demonstrate collaborative care (Passi et al., 2013; Reeves et al., 2016b).

The hidden curriculum can reinforce or contradict messages delivered in formal instruction. In interprofessional learning, formal education between professions may be undermined by the values and attitudes observed in the clinical setting, for example, equal conditions between students in a classroom setting is contradicted by the observed dominance of doctors in the clinical setting (Hafferty & O'Donnell, 2014). Ideally, educators should prepare students for dealing with suboptimal clinical environments (Burford, Morrow, Rothwell, Carter, & Illing, 2014). The hidden curriculum is also present within educational settings, for example, in the differential weighting given to subjects such as interprofessional education, in assessment and curriculum (Hafferty et al., 2015).

The use of theory to inform development of interprofessional curricula

Adult learning theory has frequently been used to inform and develop formal interprofessional education curricula and is considered highly useful (Sargeant, 2009). Adult learning was introduced as a concept by Knowles in 1970, and later expanded to distinguish adult from child learners (although significant overlap exists) (Knowles, 1984). Adult learning theory has been embraced by a wide variety of educators and describes five main considerations in adult learning: self-concept, experience, readiness to learn, orientation to learning, and motivation to learn (Brookfield, 1998). The principles apply to interprofessional learning as this is an adult learning context where the previous experience of a learner may be particularly relevant in forming their perspective of their role and that of another profession (Barr, 2013; Sargeant, 2009). Interprofessional learning fits with the principle that adults learn best through experiential techniques as learning with, from and about each other, and lends itself well to problem solving and case-based formats (Barr, 2013; Parsell & Bligh, 1998).

Transformative learning theory is helpful in examining the process and outcomes of interprofessional learning because it often challenges a learner's values and beliefs (Sargeant, 2009). Transformative learning is a theory that explains how learning occurs as a result of a dissonant or uncomfortable experience (Mezirow, 1991). Although often used to describe a major shift (transformation) in personal values as a result of a life crisis or major life transition, the theory can also be applied to "disorienting dilemmas" (Mezirow, 1991, p. 197) created by a teacher or learning context. Interprofessional learning can constitute such a dilemma as the learner's perspectives and beliefs are usually challenged by contact with another professional group (Sargeant, 2009). In particular, learners may experience dissonance in how they see their own role as well as the roles of other professions during interprofessional learning activities (Oandasan & Reeves, 2005). Interaction with others is a

vital component of transformative learning (Brookfield, 1998; Cranton, 1996) and a requirement of interprofessional learning. Furthermore, the objectives of interprofessional learning include more than the simple acquisition of knowledge associated with a standard uniprofessional learning episode which is a recognised feature of transformative educators and education. Content may be similar to other types of learning, but instructional strategies and objectives are different in transformative learning (Dirkx, 1998).

Reflection is a critically important part of transformative learning (Kitchenham, 2008; Mezirow, 1997). Reflection is an important tool for enabling learners to make meaning from complex situations and is drawn upon in the curricula of most health professions (Mann, Gordon, & MacLeod, 2009; Norrie, Hammond, D'Avray, Collington, & Fook, 2012). This commonality to multiple professions also makes reflection an excellent tool for interprofessional learning. Reflection is associated with deeper learning and incorporates both affective and rational components of learning (Kitchenham, 2008). This is relevant in interprofessional learning where attitudes and deeply held values may be challenged. The tendency and ability to reflect varies across individuals. Learners benefit from a structure to guide reflective activity, especially in the early stages of learning (Mann et al., 2009; Mezirow, 1997).

Both intergroup contact theory and social identity theory are valuable frameworks to help guide educators when bringing together different professional groups in order to avoid negative outcomes (Brewer, 1979; Carpenter & Dickinson, 2016; Khalili, Orchard, Laschinger & Farah, 2013). In addition to Allport's conditions of equal status, other factors may be important. For example, contact between dental and medical students produced a negative effect when there was no common task (Ajjawi, Hyde, Roberts, & Nisbet, 2009). Some authors found that a reduction in prejudice and negative stereotypes during contact is dependent on a positive outcome from the task undertaken. Both similarities and differences

between groups need to be explored and participants need to have positive expectations of the contact (Carpenter & Dickinson, 2016). The need for positive expectations may be especially relevant in interprofessional education where preconceived attitudes and views about other professions are likely to be present. Conversely, contact with members of another group may provide opportunities to learn about them and dispel or challenge previously held stereotypes.

Factors impacting the implementation of interprofessional learning in curricula

Although the need for interprofessional learning before licensure is widely argued (Dunston et al., 2019; The Interprofessional Curriculum Renewal Consortium, 2014), implementation is acknowledged as difficult. Barriers occur at multiple levels and are well recognised (Grace, 2015; Poore et al., 2014). The barriers to implementation of interprofessional learning in health professions are well documented and include timetabling, resources, staff attitudes and skills, professional silos and uniprofessional education programs (Greenstock, Brooks, Webb, & Moran, 2012; Lawlis, Anson, & Greenfield, 2014; Poore et al., 2014). Barriers can be categorised as governmental, professional, institutional and individual (Lawlis et al., 2014). There has been an increase in government and professional support for these activities through policy and accreditation (Frenk et al., 2010). Both medicine and pharmacy programs in Australia have an accreditation requirement for inclusion of interprofessional content within curricula (Australian Medical Council, 2012; Australian Pharmacy Council, 2012). However, the institutional and individual challenges to implementing interprofessional education appear to have changed little in two decades (de Vries-Erich, Reuchlin, de Maaijer, & van de Ridder, 2017; Parsell & Bligh, 1998). Some have suggested greater faculty development is key to enabling interprofessional education (Lawlis et al., 2014).

A lack of clearly understood and agreed definitions of interprofessional learning are acknowledged (O'Keefe & Ward, 2018) and may lead to poor staff cohesion and absence of a

shared vision (de Vries-Erich et al., 2017). Lack of resources for interprofessional learning is often mentioned as a barrier, particularly with regard to administrative and timetabling support (de Vries-Erich et al., 2017; Lawlis et al., 2014). Scarce resources may also affect the way in which interprofessional learning is implemented and potentially lead to a reduction in efficacy (Grace, 2015). Online methods of interprofessional education have been employed and may require less resources but are less preferred by students than face-to-face interaction (Collins et al., 2017). The social interaction is felt to be a critical part of how interprofessional learning changes participants' attitudes and closer relationships are more likely to promote positive outcomes (Pettigrew, Christ, Wagner, & Stellmacher, 2007). The issue of scheduling is the most commonly identified barrier due to mismatch between the timetables of uniprofessional programs (Brock et al., 2013). The importance of funding as a necessary element for success is not often mentioned in published interprofessional research. This may be because many studies themselves receive research funding (particularly larger scale studies) (Reeves et al., 2016a). It is likely that resourcing will impact the implementation and long-term sustainability of interprofessional education initiatives after research is completed.

Universities which have multiple health professions education programs may find it easier to enact learning between these groups and this may (pragmatically) dictate which professions are represented in interprofessional learning at a particular campus (Jones et al., 2012). Nevertheless, there are multiple challenges in implementation of education across multiple professional groups. The sheer size of a cohort comprising multiple professional programs is daunting and accommodating this requires more space and more educators. In addition, timetabling across multiple programs which have different structures is complicated. However, it may not be essential to have every profession represented in formal education sessions for them to create effective learning. Since many of the concepts of

interprofessional practice are common across health professions, much of this learning could be construed as transferable.

The ongoing paucity of embedded interprofessional learning in health professional students' curricula, despite widely held belief in its efficacy and importance, is often attributed to problems in implementation (Olenick et al., 2010; The Interprofessional Curriculum Renewal Consortium, 2014). However, it may also reflect more deep-seated cultural issues in healthcare practice and the siloed approach to both practice and education (Dunston et al., 2009; Khalili, Hall, & DeLuca, 2014). Interprofessional learning is often seen as a way to address negative attitudes and improve workplace culture (Frenk et al., 2010; Hammick et al., 2007; Reeves, 2001; Suter et al., 2012). There is evidence of positive impact in this regard, but often this is only short-term whereas sustained measurable benefits are desirable (Reeves et al., 2016a).

It is unlikely that education alone can deliver a major cultural shift and there have also been calls to ensure that interprofessional collaboration is a goal across the continuum of clinical education and in the workplace (Frenk et al., 2010; Suter et al., 2012; Thomas, Gilbert & Thompson, 2016). The optimal timing for formal interprofessional education is unclear but the view that it can be delayed until after graduation is less accepted given that it leaves graduates deficient in the necessary professional capabilities for interprofessional practice (Freeth et al., 2005). The main debate centres on whether interprofessional education should occur early before attitudes toward other professions are well-formed or deferred until students have a clearer understanding of their professional roles (Hudson, Lethbridge, Vella & Caputi, 2016). One reason proffered for delay is that students need a chance to develop their uniprofessional identity (Gilbert, 2005). However, as most health professional students begin identification with their profession early (in some cases prior to entry to the program), this may not be a sufficient reason to delay interprofessional interaction (Elcin et al., 2006;

van Huyssteen & Bheekie, 2015). It has been argued that an immersive style of interprofessional education (which closely resembles professional roles) may be more beneficial closer to graduation when students have developed a clear sense of their professional role (Gilbert, 2005).

1.2.3 Professional Identity

The concept of professional identity is common to many professions including those outside of health, for example, teachers and lawyers (Beijaard, Meijer, & Verloop, 2004; Costello, 2005). Professional identity has been defined in terms of how an individual conceptualises themselves within their occupational context based on attributes, beliefs, values, motives, and experiences (Slay, Khapova, Arthur, & Smith, 2010). Professional identity incorporates professional roles and how these intersect within the healthcare team (Crossley & Vivekananda-Schmidt, 2009; Vivekananda-Schmidt, Crossley, & Murdoch-Eaton, 2015). Thus, it is influenced by and may influence interprofessional interactions and the capacity for collaboration (Joynes, 2017). The development of professional identity is a complex process contextual to the society and the systems in which students and professionals interact (Daniels, 2008; Gleeson, 2010; Wilson et al., 2013). The obligations and responsibilities of a health professional are influenced by societal norms and expectations, including the way in which resources are allocated. In order to achieve the embodiment of professional identity, personal transformation of an individual must occur (Crossley, & Vivekananda-Schmidt, 2009; Cruess et al., 2014). This transformation is an internal process whereby an individual's values, assumptions and beliefs are changed (Mezirow, 1997). This will usually occur over a long period of time and involves reflection (Wald, 2015). Some argue that development of professional identity requires integration of personal and professional values with consistent application of these values and as a result, may not be achieved until an individual has gained some experience in professional practice

(Kegan, 1982; Bebeau, & Monson, 2012; Cruess, Cruess & Steinert, 2016). This may be especially true for lengthy undergraduate courses (such as medicine and pharmacy) which are relatively separate from the wider student body, in location and course structure (Weaver et al., 2011). Medical programs often promote a degree of social isolation, further delaying personal maturation (Blakey, Blanshard, Cole, Leslie, & Sen, 2008).

However, evidence suggests that many of the attitudes and beliefs underpinning professional identity are present even before entry to study, including attitudes to interprofessional relationships (Cruess et al., 2016; van Huyssteen & Bheekie, 2015). In many cases applicants have worked towards gaining entry for many years and have won a place in their degree through a competitive process. They have already adopted particular values and attitudes that are the foundation for their professional identity (Weaver et al., 2011) including their attitudes to collaboration (Horsburgh, Perkins, Coyle, & Degeling, 2006).

Supporting the development of professional identity in pre-licensure students

Professional identity is integral to what it means to be a health professional, and some argue that it should be the main goal of clinical education (Cruess et al., 2014; Monrouxe, 2010; Wilson et al., 2013). The intended outcome is for students to embrace and internalise the attributes and values of a health professional (Cruess et al., 2014). This is not a new concept – it appears in very early medical education literature (Merton, 1957). Much of the education about values and behaviours occurs in the setting or guise of knowledge transfer as part of the hidden curriculum (Hafferty & O'Donnell, 2014). However, some elements of professional identity are distinct and can be separated from pure knowledge attainment. Furthermore, the inherent worth of teaching professionalism and professional behaviour is often undervalued compared with knowledge acquisition (Murphy, Putter, & Johnson, 2013), perhaps due to its affect-laden nature. Professional identity often receives less space in

curricula and learning outcomes may be less explicit which contributes to the perception of lesser value (Hafferty & Castellani, 2009). Nevertheless, professional identity has been recognised as an important component of medical education for several years and may be encompassed by nebulous terminology such as “the art of medicine” (Barr, 2010, p. 679).

Although professional identity formation involves experience and exposure to other professionals, some educational framework is also desirable (Elcin et al., 2006; Fernandes, Shore, Muller, & Rabow, 2008). Since students and clinicians tend to value experiential learning in the clinical environment, it seems logical to scaffold and build on this process through formal learning and teaching (Lapkin et al., 2013). Giving students responsibility for real patients triggers their identity development (Aper et al., 2015). They are naturally motivated to determine their preferred consultation style and may choose to adopt models from formal teaching or follow examples they have seen in placements. This may be a source of internal conflict as they struggle to define their role and the style that suits them best (Cruess et al., 2014; Hatem & Ferrara, 2001; Sabatino, Rocco, Stievano, & Alvaro, 2015). Students tend to examine role models critically and compare them with ideal models and frameworks whilst developing their own identity. It has been suggested that educators should outline the transformative nature of training, giving students some expectations of the difficulties and the process of change they will undergo (Frost & Regehr, 2013).

Authentic simulated consultations where clinical problem solving is integrated with communication skills are also a powerful driver for students to define their role and identity in pre-clinical years and may allow a safe space to test different consultation models. Some programs have sought to teach the subject of professional identity formally in the early years but acknowledge that a student’s source of experience and role models may be quite different early compared to later in the program (Elcin et al., 2006). Early role models may include a student’s own experience as a patient (or the relative of a patient), or from family members

who are health professionals. Role models in popular media are also abundant for doctors, however for pharmacy, there are a few examples, and those that exist are often negative (villainous) (Elvey, Hassell, & Hall, 2013). In pharmacy programs, the presentation of an idealised pharmacist role by educators has been criticised as failing to equip students for the reality of practice (Noble, McKaige, & Clavarino, 2019). The disparity between role models in educational settings may in part be due to small numbers of practising pharmacists in teaching roles (Mylrea et al., 2017).

Apart from lack of clinical experience, deficits in healthcare knowledge early in training may also cause difficulty in consultations due to self-doubt, even if communication skills are well-honed (Wilson et al., 2013). Some authors have postulated that this early interaction may complicate professional identity development and cause ongoing difficulties (Wilson et al., 2013). It is worth considering this in planning early curricula and patient interaction. Students are often tempted to take on responsibility and help a patient even when they do not have the necessary knowledge to provide appropriate advice. Particularly in medicine, students seem to feel compelled to work things out themselves, taking the lead in interactions, despite gaps in experience and knowledge (Aper et al., 2015; Fernandes et al., 2008). Consideration of the relative harms and benefits of early interaction are therefore paramount in planning early curricula. If included, close supervision and debrief could be important additional measures to prevent negative impact in this early learning period (Gleeson, 2010).

Undoubtedly, the clinical learning environment should provide good role models and reinforce the desired model of professional identity. However, role modelling alone is not enough, partly because both the pharmacy and medical professions are no longer homogeneous, and also due to the fact that they operate in a more complex diverse healthcare system and society and students may struggle to make sense of their experiences (Mylrea et

al., 2017; Steinert et al., 2007; Wilson et al., 2013). Also, not all role models are desirable. Role modelling should include those facets of clinical practice that are particularly challenging (Fernandes et al., 2008; Hatem & Ferrara, 2001). Ways to facilitate student development by exploration of multiple possibilities and meanings are presented in health education literature, although not commonly employed (Hatem & Ferrara, 2001; Monrouxe, 2010; Wilson et al., 2013). Promoting student reflection is a commonly utilised educational technique in order to promote deeper thinking and more transformative learning around professional identity (Dirkx, 1998; Mezirow, 1995; Wald, 2015).

Other challenges for students to navigate in the clinical learning environment include the practical constraints of delivering healthcare. The pressures of workflow may leave insufficient time for explanations or debrief, and students may witness discussions that are hard to interpret with the piecemeal view they obtain (Lingard, Reznick, DeVito, & Espin, 2002). Conforming to the fiercely hierarchical environment of the hospital is another challenge that may be a source of personal conflict for a student. Pharmacy students find difficulty assuming an identity within the interprofessional team when their advice is not accepted by other team members (Noble et al., 2019). However, interaction with senior clinicians has great potential to influence professional identity development through role modelling, for example, the ward round, where medical students present directly to senior doctors, may serve to emphasise certain aspects of care, often the scientific rather than humanistic elements of cases (Wilson et al., 2013; Steinert et al., 2007). Informal interaction (for example, during tea and coffee breaks) can also be important in fostering a sense of inclusivity or belonging with the healthcare team which impacts on professional identity development (Wilson et al., 2013).

Whilst recognised as a significant focus in medical and nursing education, supporting the formation of professional identity has not been a major part of formal pharmacy curricula

(Noble et al., 2019). More recently there has been an increased attention to this, but it is often deferred to later stages of the program, contrary to preferred educational models (Mylrea et al., 2017). Some authors have expressed a belief that pharmacy identity is not formed as early as in medicine (Dawodu & Rutter, 2016). Reasons proffered include that a proportion of those entering pharmacy study have not done so as their first choice (they may have failed to gain a place in dentistry or medicine) (Noble, Coombes, Nissen, Shaw, & Clavarino, 2014). Thus, the strong identification seen prior to entry into medical study may not apply to pharmacy students. The changing nature of pharmacy identity and practice in recent years has also been cited as a problem for pharmacy students' development of identity (Dawodu & Rutter, 2016; Elvey et al., 2013). One of the strong components of pharmacy identity has been the scientific approach and underpinning education and training. Whilst the scientific approach remains important, the changes in practice and shift to more patient-centred roles has seen the emergence of different identities, with concerns about a lack of consensus around pharmacist identity (Dawodu & Rutter, 2016).

In recent decades there have been changes in consumer expectations in healthcare, and clinicians are expected to have high level skills in communication, collaboration, and advocacy; in addition to knowledge and technical proficiency (Niemi, 1997; Steinert et al., 2007; Timmermans & Oh, 2010). This has implications for curricula as professional identity is constantly evolving and shifting (Wilson et al., 2013). Preparing students for future change in identity may be equally important as the enculturation to lifelong learning as a means of keeping pace with advances in technology, practices and understanding of illness, disease and health.

The interprofessional nature of professional identity

Given the team contexts in which current students will work, the development of an interprofessional mindset and skillset is a necessary aspect of professional identity formation.

Development of collective professional identities in the context of health service delivery could be seen as a desirable outcome from this interprofessional learning (Bartunek, 2011; Brewer & Gardner, 1996; Khalili et al., 2013). The terms ‘uniprofessional’ and ‘interprofessional’ identities have been coined as a way to embrace both the identity of one’s own profession and that of relating with and being part of a broader healthcare team (Khalili et al., 2013). More than being a good ‘team player’, an interprofessional identity serves to remove the need for intergroup conflict and puts the respect and inclusion of others as a foundation and core belief rather than a skill or competency. Social identity theory and intergroup contact theory can be used to provide a framework that demonstrates how individuals may incorporate more than one identity (Carpenter & Dickinson, 2016). For health professionals, the team capabilities of an individual may be enhanced without unnecessary conflict by holding dual uniprofessional and interprofessional identities (Khalili et al., 2013). The ability to look beyond one’s own profession also has the advantage of expanding the pool of role models.

1.2.4 Power, Hierarchy and the Relationship Between Pharmacy and Medical Professions

Different professions often lack a shared view of health and wellbeing and have differences in professional language. These differences arise in part as a result of their different historical origins and paradigms and may impede collaborative learning and practice (Hall, 2005). The traditional relationship between pharmacists and doctors is an unequal one (Flanagan, Virani, Baker, & Roelants, 2010). Pharmacists tend to be subordinate to medical professionals and appear complicit in this hierarchical relationship (Dobson et al., 2009; Rosenthal, Austin, & Tsuyuki, 2010). Despite a clear expertise in medications, pharmacists may behave as a passive member of the team. They will make suggestions rather than take the lead on patient care even when it is an area within their skillset (Frankel & Austin, 2013;

Rosenthal et al., 2010). The sociological literature has contributed greatly to the understanding of power relationships between the health and social care professions (Baker et al., 2011). Historically, medical dominance of other health professions has been a societal norm with legal sanctions and demarcations upholding this authority (Johnson, 2016; Willis, 2014). For example, the legal responsibility for patient care is heavily weighted toward medicine and seems to support the status and roles afforded to doctors (Baker et al., 2011). However, these hierarchical relationships can impede collaboration and may be a barrier to safety in healthcare. The relationship between medicine and pharmacy is particularly important in providing care for patients with multiple medications and multimorbidity (Gallagher & Gallagher, 2012). There is, however, a power gradient between these professions and the dominance of medicine is reinforced by their roles in tasks such as prescribing (Gallagher & Gallagher, 2012; Johnson, 2016).

The language commonly used in healthcare teams reflects the dominance of medicine, with terms such as ‘allied health’ tending to place medicine into the ‘in group’ and relegate other professions to the ‘out group’, as described by Social Identity Theory (Tajfel, 1974). Similarly, the term ‘non-medical prescribers’ reinforces a delineation along similar lines. In interprofessional settings, doctors are commonly positioned as the leaders with the ultimate control of patient care. They tend to delegate tasks, as opposed to collaborating with other team members (Nugus, Greenfield, Travaglia, Westbrook, & Braithwaite, 2010). The language used by health professions students in interprofessional settings also implies a hierarchy of professions (Paradis, Pipher, Cartmill, Rangel, & Whitehead, 2017), and likely reflects the effect of clinical role modelling.

The evolution of the medicine and pharmacy professions

The professions of pharmacy and medicine are said to have a common beginning, with the separation of pharmacy as dispensers with specialised skills and knowledge traced to

a European edict by Frederick II in the 12th century (Kremers & Sonnedecker, 1976). Thus, the professions share some cultural norms although they have evolved separately across decades. One of the major roles of pharmacists has been the dispensing and supply of medicines and this remains the stereotypical view of their role, a view even held by students entering the program (van Huyssteen & Bheekie, 2015). There have been significant changes in the role of pharmacists in recent decades with an increased emphasis on patient-care roles, in part due to the industrialisation of pharmaceutical manufacturing (Elvey et al., 2013; Gallagher & Gallagher, 2012; Roberts et al., 2005). With changes to medicine production, pharmacy roles such as compounding (the preparation of medicines for use) have diminished dramatically in most countries. However, the increasing complexity of drug therapies and multimorbidity may be another driver for more patient-centred roles for pharmacists. There is evidence that their involvement in direct patient care impacts positively on patient outcomes and may be financially economical for healthcare providers (Flanagan et al., 2010).

The major intersection of roles between the two professions remains around prescribing. In the relationship between medicine and pharmacy, prescribing represents a legal sanction of medical dominance, where the doctor holds the ultimate power of choice of medication. The medical dominance in this process reduces the clinical autonomy of pharmacists (Edmunds & Calnan, 2001; Weiss & Sutton, 2009). Recognised non-medical prescribers are still a very small minority in Australia including midwives, dentists and nurse practitioners. They operate with a limited formulary and regulation of their practice overseen by medical prescribers (Nissen & Kyle, 2010). The medical profession has challenged the move of pharmacists into more direct patient care roles, questioning their expertise and suitability for these tasks (Australian Medical Association, 2012; Australian Medical Association, 2014; Nissen & Kyle, 2010). This is despite a demonstrated consumer comfort

with this concept in other countries (Beahm, Smyth, & Tsyuki, 2018; Tsyuki et al., 2015) and a high unmet need for services in primary care (Corcadden et al., 2016).

Although they may not prescribe, pharmacists have the potential to exert a positive influence on the prescribing process (Dobson et al., 2009; Guirguis & Sidhu, 2011; Weiss & Sutton, 2009). The explosion in available therapeutic options over the past few decades has adversely impacted the ability of doctors to maintain a depth of knowledge about pharmacotherapeutics. Expert pharmacotherapeutic knowledge may benefit patients in a multitude of ways: identification of interactions, tailoring of therapeutic options, and adjustment of dosing for a specific patient (Gallagher & Gallagher, 2012; Routledge, 2012). Pharmacists may provide an additional layer of cross checking, adding to the safety of prescribing. This is particularly important in cases of multimorbidity and polypharmacy, which are increasingly common (Barton et al., 2012; Holden et al., 2011; Roughead, Semple & Rosenfeld, 2013). However, the capacity for pharmacists to influence prescribing relies on an effective interprofessional collaboration with doctors. There is evidence to suggest that poor communication between prescribers and pharmacists is detrimental to patient outcomes, such as adverse drug events during and after hospital discharge (Gallagher & Gallagher, 2012; Hesselink et al., 2014).

Profession as a basis of power

The development and evolution of a 'profession' is helpful in understanding the basis of the power base of the medical profession. Profession has been defined as:

“An occupation whose core element is work based upon the mastery of a complex body of knowledge and skills. It is a vocation in which knowledge of some department of science or learning or the practice of an art founded upon it is used in the service of others.” (Cruess, Johnston & Cruess, 2004, p. 74). Professions are also defined by a culture which maintains professional norms and represents its members economic, political, and social interests

(Berger & Luckmann, 1966). In establishing or asserting themselves as a profession, occupational groups engage in a process of closure to establish a monopoly over specific areas of skills and knowledge (Witz, 1992). Thus, a profession may enjoy protected markets and significant economic benefits, along with the privilege of self-regulation and high levels of autonomy. These privileges are given in return for commitments (for example, promotion of the public good) and accountability in a social contract between the profession and society (Johnson, 2016). Both medicine and pharmacy have specific complex expertise that enables them to be defined as professions. However, the dominance of medicine over other health professions has been a long-standing pattern (Willis, 2014).

The majority of community pharmacists' work in Australia is government funded (via dispensing of prescriptions), as are the newer patient-centred models of practice, such as Home Medicines Review (a comprehensive clinical review of a patient's medicines in their home by an accredited pharmacist) (Department of Health, 2019). Doctors also retain control of this process as a general practitioner referral is required. However, the decision to broaden practice from traditional dispensing to more patient-centred practice is currently an individual decision in Australia. When deciding to pursue patient-centred models of practice, a pharmacist may take into account multiple factors such as financial benefits and losses, workload management and the need for upskilling (Chan et al., 2008; Rosenthal et al., 2010; Stewart et al., 2009). Similarly, the majority of doctors' work, both in hospitals and in the community, is funded through national government schemes with a fee for service model in general practice (Department of Health, 2019). Additional funding is available to practitioners via private health schemes and patient co-contributions. Doctors in Australia may undertake either private or public employment or a mixture of both.

Some authors have expressed the view that medicine's power and status have diminished in contemporary society (Crues et al., 2004; Timmermans & Oh, 2010). There

have been many challenges to the medical profession including economic rationalism, a growth in consumerism, an associated increase in litigiousness, the rise of complementary and alternative medicine, and the changing roles of other health professionals (Boyer & Lutfey, 2010; Timmermans & Oh, 2010). The increased access to information afforded to consumers by the Internet is another challenge to medical knowledge as the exclusive domain of the medical profession (Barker, 2008; Gage & Panagakis, 2012). Nevertheless, doctors are still recognised by society as the main drivers of the healthcare system (Timmermans & Oh, 2010). Medicine remains a privileged occupational group and retains institutional power and social legitimacy, exercising control over subordinate groups (Johnson, 2016). It has also been noted that the medical profession is very adept at maintaining power by appearing to adopt initiatives to change practice whilst reasserting their dominance over other professions. It has been postulated that interprofessional education may be another example of the medical profession maintaining power, whilst purporting to engage in the pursuit of greater collaboration between professions (Kuper & Whitehead, 2012). Little change to medical dominance results from educational initiatives if the embedded hierarchies that pervade in practice are not challenged (Kuper & Whitehead, 2012; Timmermans & Oh, 2010).

The medical profession

For medical students, the development of professional identity is very important for enabling the application of their knowledge and skills in practice (Monrouxe, 2010; Cruess et al., 2014). Students need to incorporate ethical aspects and a professional approach into their behaviour. Despite the considerable time commitment and large proportion of time spent in clinical placement gaining experience, many students still find this process of integration challenging. The identification with a professional identity may begin prior to entry to medical school for many, and influences may include family. Over 50% of applicants to medical school have a family member in the profession (Laurence, Zajac, Turnbull, Sumner,

& Fleming, 2013). This strong identification with their group has positive effects in the development of professional identity. However, there may be negative outcomes of this strong identification, including a lack of collaborative behaviours and prejudice, which is a known effect of 'in-group' identification (Tajfel, 1974; Pettigrew et al., 2011). Although medical students recognise the need for teamwork skills, they commonly demonstrate an exclusive attitude to learning with other health professional students, preferring to learn with their own profession (Weaver et al., 2011). In addition, medical students display social exclusivity, further limiting their exposure to other professional groups.

The term 'social exclusivity' refers to the tendency to associate with one's own professional group and can be seen in the choice of social relationships (friends, housemates, partners and so on), as well as membership of sports clubs and societies. There are several plausible reasons cited for why this occurs in medicine (Blakey et al., 2008), including high workload, large number of contact hours and placements away from main university campus which render them more isolated from other student groups. The length of undergraduate medical programs may also play a role as students become very familiar with their cohort many years. The perceived superiority that medical students are well-known for may also originate from this social exclusivity, as it is a recognised effect of strong 'in-group' cohesion (Abrams & Hogg, 2010).

The language choices learned are an important part of health professional identity and can be seen both in formal education sessions and the clinical environment. Although arguably some of the medical language learned is necessary for specific communication (for example, pertaining to anatomy and investigations), many of the linguistic rituals relate to identity including the relationship to other professional groups (Monrouxe, 2010). These language choices may also express attitudes toward other professional groups, albeit in subtle

ways. The use of language can be important in establishing or reinforcing power relationships in interprofessional interactions (Jabbar, 2011).

The pharmacy profession

The nature of pharmacy practice in Australia is broad and encompasses work in both hospital and community settings (Moles & Stehlik, 2015). Despite a shift in scope of practice in recent decades, pharmacy is still viewed as a knowledge-based profession (Waterfield, 2010) and most members identify strongly as scientists (Elvey et al., 2013). Much of a pharmacist's work involves calculation, measurement and crosschecking data from multiple sources (Moles & Stehlik, 2015). In general, pharmacists have a more detailed knowledge of drug properties, interactions and effects compared with doctors (Keijers et al., 2014; Rosenthal et al., 2010). There is a two-tier system in Australia for the supply of medicines, where a pharmacist is responsible for dispensing the doctor's prescription, thereby adding a layer of safety with a chance to pick up errors or potential problems (Routledge, 2012). In practice, most pharmacists are reluctant to question a doctor's authority and will rarely offer an opinion about prescribing unless prompted. Even when faced with a situation with potential for serious harm, most pharmacists will avoid direct challenge of the prescriber (Frankel & Austin, 2013; Rosenthal et al., 2010). Apart from creating a circuitous path to navigate best care, this is a system with little chance of utilising the skills of the pharmacist.

For pharmacy students, as with other health professional students, opportunities to practice tasks such as advising patients about medicines or dispensing medicines allows them to identify with their professional group in a way that simply learning about the profession in class does not provide (van Huyssteen & Bheekie, 2015). The early student view of a pharmacist relates to the knowledge and dispensing of medicines with little understanding of the patient-centred, caring and communication roles (Noble et al., 2014). The predominant aspect of the practising pharmacists' identity is also related to the scientific elements of their

training, with knowledge seen as a desirable attribute, particularly in their interaction with doctors (Elvey et al., 2013). In addition, pharmacy students tend to define themselves in relation to their role within a healthcare team and their contribution in terms of knowledge to the care of the patient (Noble et al., 2019).

Similar to medical students, it is contact with patients and clinical tasks that tends to prompt development of professional identity. However, this does not occur early in the training program and therefore professional identity development for pharmacy students may be delayed (Noble et al., 2019). For a pharmacy intern, in the first year of practice post-graduation, there are challenges in dealing with patients and doctors. Undergraduate training does not always provide students with clarity or sufficient experience in how to approach these challenges (Noble et al., 2014). In particular, many interns feel their clinical training has been too idealised for the realities of patient care (Noble et al., 2019). Similarly, although a pharmacist's professional identity includes communication and patient care, some members of the profession are seen as awkward and lacking skills in this domain (Elvey et al., 2013). Unlike other health professions, pharmacy has an emphasis on scientific based skills rather than humanistic qualities for program entry which may be seen as incongruous with the increasing patient care role. Some authors have suggested a greater focus on developing skills in clinical decision making is needed to improve the ability for pharmacists to actively participate in therapeutic decisions (Wright, Anakin, & Duffull, 2019).

The role of pharmacists is changing, both in Australia and internationally. There is a move toward more patient-centred care and more direct patient contact (Gallagher & Gallagher, 2012; Rosenthal et al., 2010; Wright et al., 2019). Concurrently, there is a decline in the requirement for compounding and other technical dispensing skills in most pharmacies. There is a perception that pharmacists in hospital teams now have a more visible clinical profile than in the past, with a presence on ward rounds rather than being hidden in the

dispensary (Elvey et al., 2013). The emergence of specific patient care roles for pharmacists, such as Residential Medication Management Review and Home Medicines Reviews are examples of pharmacist involvement in solving complex medication issues (Moles & Stehlik, 2015; Roberts et al., 2005). These reviews involve comprehensive assessment of a patient's use of medicines in their place of residence (Department of Health, 2019). However, these patient-centred roles are considered expert clinical care roles, requiring further training and accreditation. There is some discussion in the literature about a mismatch between the reality of practice and the expectations of professional roles fostered in university (Noble et al., 2014).

Professionalism in curricula

Professionalism as a component of health professional education has been widely discussed in recent years (Birden et al., 2014; Ong et al., 2020). Often considered difficult to define and assess (Cruess et al., 2014; Li, Ding, Zhang, Liu, & Wen, 2017; van Huyssteen & Bheekie, 2015), a consistent approach has been lacking, with educational institutions more often recognising it in the breach (Wilkinson, Wade, & Knock, 2009; Goldie, 2013). Many agree that professionalism is complex and therefore any definition will also be complex and lengthy. Some authors distinguish between 'professional identity' as how an individual conceives of him or herself as a health professional and 'professionalism' which involves consistently displaying the behaviour of a professional (Wilson et al., 2013). Indeed, professionalism can be seen as a part of professional identity. Authors list a number of behaviours, values and relationships that denote professionalism including respect for others, accountability, integrity, honesty, altruism, and continuous improvement (Cruess & Cruess, 2004; Ong et al., 2020; The Royal College of Physicians and Surgeons of Canada, 2020).

Much as the development of professional identity occurs over time and in response to different experiences, some authors see professionalism as something that is "not made, but

grown” (Burford et al., 2014, p. 371). One study in a selection of health professions students found an ‘individual discourse’ around professionalism, in addition to ‘interpersonal’ and ‘societal-institutional’ discourses (Burford et al., 2014). Some students referred to their self-identity comprising an aspect of professionalism which must be maintained at all times, whilst others felt some aspects of professionalism (and identity) such as clothing and dress code, could be adopted in the workplace, like a mask. Many students did want to have some separation of work and personal life, which seems commensurate with the concept of work-life balance but may also bely the conflict between an emerging professional identity and the current/former self. Interpersonal interaction is another aspect of professionalism and one in which context is very important in determining the appropriateness of behaviour. Whilst educators consider that assessment of professionalism could be achieved by looking at students’ ability to identify appropriate behaviour, this is also context dependent (Burford et al., 2014). For example, a student may address a tutor by their first name in some institutions, whilst this is not acceptable in others.

Just as with other elements of professional identity, role modelling is felt to be an important mechanism of learning in professionalism. There is evidence that students select role models and identify individual behaviours of role models based on various characteristics including evident enjoyment of their work and interpersonal skills, as well as their attitudes toward students (Baldwin, Mills, Birks, & Budden, 2014). However, role modelling alone should not be seen as sufficient and many authors have recommended that professionalism should be taught explicitly (Fernandes et al., 2008; Steinert et al., 2007). Various approaches have been mentioned, including outlining a list of traits or characteristics, whilst others have suggested it should be approached as a moral endeavour. Some suggest that educators should focus on the development of a professional identity rather than teaching and assessing professionalism (Cruess et al., 2014). It is likely that a

combination of these approaches is reasonable. Accrediting bodies also mandate the inclusion of professionalism in curricula via standards, although in Australia this is more explicit in standards for medical program accreditation than in pharmacy (Australian Medical Council, 2012; Australian Pharmacy Council, 2012).

In outlining acceptable professional behaviour, there is a palpable tension between promoting standardisation and welcoming diversity (Frost & Regehr, 2013). In recent decades, health professions have become more heterogeneous and expectations more complex, therefore appropriate role models are less easily identifiable (Steinert et al., 2007). This lack of clarity can be seen in dress codes and language and may create additional conflicts for students, particularly those who already sit outside the usual stereotypes of a health professional. There is also cultural, social and political context to professionalism (Li et al., 2017) and this may not translate across all situations. Nevertheless, this is not to imply that appropriate role modelling and facilitation of reflection cannot aid in this aspect of development as with other elements of professional identity (Steinert et al., 2007). Professionalism has also been described as the ideology pertaining to a particular profession and its institutions (Freidson, 1994). This climate of change and evolution of roles within individual health professions creates an even more complex dynamic between professions, in the context of interprofessional learning and education.

1.3 Rationale for Thesis

The need for more formal interprofessional education in pre-licensure health professional education programs has been highlighted by accrediting bodies and educational institutions as a means to produce collaborative practitioners at graduation (Frenk et al., 2010). However, it is also clear that there are elements beyond the formal curriculum which can influence the learning of pre-licensure health professions students. Therefore, a more nuanced understanding of what pre-licensure students think and experience in learning with

students from another professional group is needed. Critically, there are relatively few studies which address the issue of power relationships in interprofessional education, particularly between pharmacy and medicine. For interprofessional education to succeed in enhancing collaborative skills, it must navigate the traditional power relationship between these professions. A deeper understanding of how students perceive and experience this hierarchy may assist in improved educational design.

The care of multimorbid patients with multiple medications is increasingly common (Holden et al., 2011; Pefoyo et al., 2015). The complexity of caring for such patients necessitates a collaborative working relationship between healthcare providers, for example, between pharmacists and doctors. The traditional relationship between medicine and pharmacy professions is characterised by a strong power differential which is sanctioned by the societal view of the professions and the legal model of prescribing (Blenkinsopp, Tann, Evans, & Grime, 2008; Willis, 2014). This hierarchy may impede collaborative practice and adversely impact patient care.

1.4 Statement of Aims and Objectives

The research aims were as follows: To explore pharmacy and medicine students' views and experience of learning with, from and about each other, and their perception of their roles within a healthcare team, with a specific focus on how elements beyond the formal curriculum such as traditional power differentials between medicine and pharmacy professions can impact learning.

Main research questions: What and how do medicine and pharmacy students perceive they learn with, from and about each other? How is the traditional power differential between the professions experienced by undergraduate medicine and pharmacy students, and how does the professional hierarchy influence how they learn together?

1.5 Methods

1.5.1 Study Design

A qualitative research approach was used to address the research questions. The research questions were qualitatively oriented by virtue of their aim to explore and understand interprofessional learning between pharmacy and medicine students, with a focus on how students experience interactions between the professions (O'Brien, Ruddick & Young, 2016).

Students from medicine and pharmacy undergraduate programs at two universities who attended interprofessional learning workshops together were eligible participants for the two qualitative studies. The students' reflective writing following interprofessional learning sessions provided the qualitative data in one study. A longitudinal follow-up of the cohort was performed utilising semi-structured interviews to collect qualitative data in the second study.

Intergroup Contact Theory (Pettigrew, 1998) provided a lens through which to explore the interaction within and between professional groups, including a critical examination of the conditions that may influence positive outcomes from contact between professional groups. The principles of Adult Learning (Knowles, 1984) and Transformative Learning Theory (Mezirow, 1991), informed the design of education sessions and provided a framework to examine student learning. Inductive thematic analysis was chosen as the most suitable approach for the research questions as it provides a rich and nuanced account of the qualitative data (Braun & Clarke, 2012).

The original intention was to perform a mixed methods study and collect quantitative data at three time points (Figure 1), utilising the Readiness for Interprofessional Learning Survey (RIPLS), a validated 19-question tool with a Likert scale response option (Parsell & Bligh, 1999). RIPLS was chosen for reliability and validity in an undergraduate population

and its published use in medicine and pharmacy students which affords opportunity for comparison (Lie, Fung, Trial, & Loheny, 2013; Thannhauser, Russell-Mayhew, & Scott, 2010). A mixed methods study did not eventuate due to poor student participation rates. Lessons learned from this process are reported in Chapter 4: ‘Students as participants in health professional education research’. The Details of RIPLS data collection, analysis and results, are contained in Appendix 7.3.10.

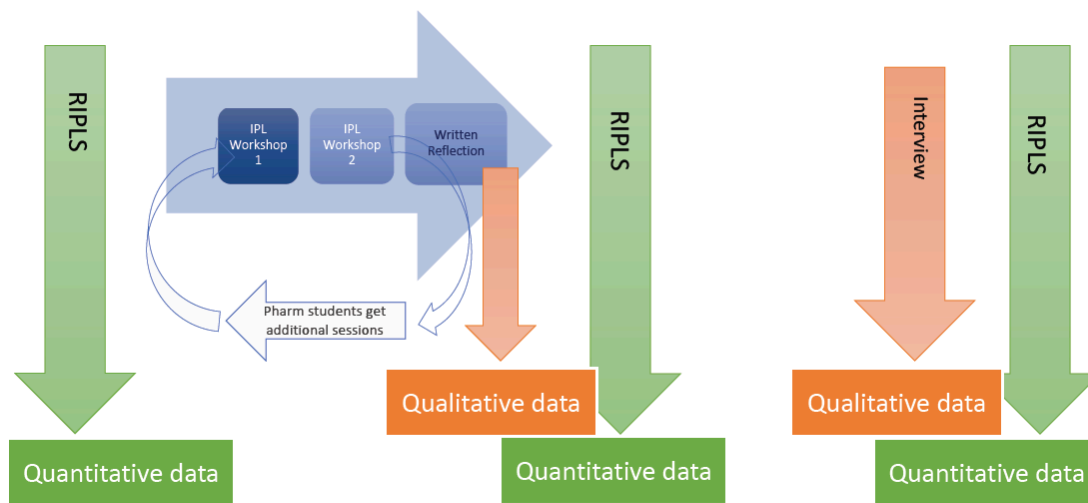


Figure 1. Illustration of data collection points.

1.5.2 Study Setting

This study was undertaken in the higher education context and involved undergraduate students from medicine and pharmacy undergraduate programs at two different South Australian universities.

The universities

The University of Adelaide was established in 1874. It is a member of the ‘Group of Eight’ - an incorporated company comprising eight Australian universities which identify as research-intensive (Go8, 2019). The University of South Australia was established in 1991 as an amalgamation of two higher education institutions: the South Australian Institute of Technology (of which the pharmacy school was a part) and the South Australian College of

Advanced Education) (Mackinnon, 2016). Since foundation, it has grown considerably in research status and funding (Quacquarelli Symonds, 2019). It is a member of the National Alliance for Pharmacy Education, an organisation whose aim is to provide leadership in both undergraduate and postgraduate pharmacy education (National Alliance for Pharmacy Education, 2019).

Table 1

Comparison of Universities by Published Rankings

Relevant websites (accessed December 2019)	University of South Australia	University of Adelaide
Academic ranking of world universities http://www.shanghairanking.com/arwu2017.html	Not ranked	101-150
QS world ranking https://www.topuniversities.com/	264	114
Times higher education world rankings https://www.timeshighereducation.com/world-university-rankings	251–300	120
ERA Research Excellence Australia Rankings 2015 https://www.arc.gov.au/excellence-research-australia/era-reports	14	7

Medicine program

Medicine at University of Adelaide is a six-year undergraduate double bachelor's degree: a combination of Bachelor of Medicine and Bachelor of Surgery (MBBS) (University of Adelaide, 2018). In the first three years, the program comprises a mixture of problem-based learning, tutorials and practical sessions. From Year four, learning occurs predominantly within attachments in hospitals and other clinical settings.

Admission to the medical program is highly competitive, with students admitted on the basis of their performance on three criteria: Australian Tertiary Admission Rank (ATAR) which is calculated from secondary school performance (Universities Admissions Centre,

2019), score in the Undergraduate Medical and Health Sciences Admission Test (UMAT) (Australian Medical Association, 2017), and the student's performance at interview (University of Adelaide, 2017). Bachelor of Medicine and Bachelor of Surgery graduates satisfy the academic requirements for provisional registration with the Medical Board of Australia (Medical Board of Australia, 2019). This degree is also accredited by the Australian Medical Council, a process whereby the program is assessed and benchmarked against set published standards by a panel of academics from other educational institutions (Australian Medical Council, 2012). Students enrolled in a medicine program in Australia are also registered with the Medical Board of Australia and are required to abide by the professional standards of the board (Medical Board of Australia, 2019).

Entrants are predominantly students who have just completed secondary school with the exception of some transfers into Year 4 from International Medical University, Malaysia (International Medical University Malaysia, 2015) and from other Australian dentistry programs. Additionally, a small number of students enter the medical program in Years one and two as a transfer from other tertiary programs of the University of Adelaide (for example, Bachelor of Science). Prerequisite secondary school subjects for school leavers entering the program are mathematics and science subjects. A high degree of proficiency in English is specified as a necessary prerequisite for international students, with an International English Language Testing System (IELTS) (or equivalent) score of seven in each band (University of Adelaide, 2018).

Pharmacy program

Pharmacy at University of South Australia is a four-year undergraduate bachelor's degree: Bachelor of Pharmacy (Honours) (B.Pharm) (University of South Australia, 2019). The program comprises didactic lectures and tutorials in the first two years, with use of case-based learning in the second half of the program to complement a clinical program of

community and hospital-based pharmacy placements (University of South Australia, 2018). Admission to the pharmacy program at the University of South Australia is a competitive process. Entrants comprise tertiary transfer entries from the University of South Australia and students who have only completed secondary school. Bachelor of Pharmacy (honours) graduates satisfy the academic requirements for registration as a pharmacist with the Pharmacy Board of Australia (Pharmacy Board of Australia, 2019b). This degree is also accredited by the Australian Pharmacy Council, which assesses programs of study and education providers against the standards (Australian Pharmacy Council, 2012). A high degree of proficiency in English is specified as a necessary prerequisite for international students, with an International English Language Testing System (IELTS), or equivalent score of six and a half in each band (University of South Australia, 2019). Students enrolled in a pharmacy program in Australia are also registered with the Pharmacy Board of Australia and are required to abide by the professional standards of the board (Pharmacy Board of Australia, 2019b).

Table 2

Medicine and Pharmacy Program Characteristics

	MBBS University of Adelaide (University of Adelaide, 2018)	B.Pharm (Honours) University of South Australia (University of South Australia, 2019)
Expected ATAR for entry*	90	80 >85, Guaranteed entry
Program length	6 years	4 years
Average cohort size	160	100
Specified prerequisites	Secondary school mathematics and science subjects. A high degree of proficiency in English (IELTS= 7 in all areas)	Secondary school biology, chemistry or physics A high degree of proficiency in English (IELTS= 6.5 in all areas)

*The ATAR is a number between 0.00 and 99.95 that indicates a student's position relative to all the students in their age group (Universities Admissions Centre, 2019).

Interprofessional learning in the medicine and pharmacy programs

Accreditation is a process whereby the education programs of each institution are assessed and benchmarked against set published standards (Australian Medical Council, 2012; Australian Pharmacy Council, 2012). The need for accreditation at regular intervals is common to both medicine and pharmacy programs. The standards for both programs contain elements of interprofessional learning and the development of the skills needed for collaborative practice (Australian Medical Council, 2012; Australian Pharmacy Council, 2012). In 2011, accreditation of the University of Adelaide Medical School highlighted a paucity of interprofessional education in the MBBS program and a requirement to introduce more interprofessional content across the whole MBBS program was mandated (Medical

School Accreditation Committee, 2015). Concurrently, faculty members within the pharmacy undergraduate program had also been discussing the value of interprofessional learning and had raised this issue at an interprofessional pharmacology journal club (L. Hotham, personal email correspondence, March 2014).

Students in both programs commence learning practical pharmacotherapeutics predominantly during their clinical attachments. For MBBS students this is in Year 4 and for B. Pharm students, in Year three. Year four MBBS and year three B.Pharm, were felt by educators in pharmacy and medicine to be logical points in both programs to pursue an interprofessional learning experience that aligned with the learning outcomes for both groups of students and maximised their ability to learn about the other profession's skillset.

At the time of this research, most students in both the MBBS and B. Pharm programs had not been exposed to formal interprofessional learning that met the commonly used definition of interprofessional learning occurring when "students from two or more professions learn about, from and with each other" (World Health Organization, 2010, p.7). However, students of both programs had some contact with teachers from other professions and there were also small 'pockets' of interprofessional education occurring that were not experienced by the whole cohort. Four of the staff involved in teaching in the MBBS and B. Pharm programs had regular contact through various activities (clinical pharmacology journal club, teaching, clinical work and research) but lacked comprehensive knowledge of each other's curriculum. Pre-existing relationships between medicine and pharmacy professionals within this informal clinical pharmacology network were considered a good foundation from which to develop these formal sessions. In 2014, a pilot of formal interprofessional learning sessions with MBBS and B. Pharm students was undertaken. The intention to implement interprofessional learning sessions across both programs in 2015 was seen as an opportunity for interprofessional education research, of which this thesis is a part.

1.5.3 Interprofessional Learning Workshops

Workshop structure

Workshops were designed to address students' needs and outcomes for both interprofessional learning, pharmacotherapeutics knowledge and prescribing skills. The workshops involved small groups of students, comprising two -three members of each profession, completing interactive shared tasks relating to case scenarios. Authentic cases provided a common goal for students in the group, with clinical problems to solve that were both relevant and practical. The small number of students in each group allowed active participation in the tasks, which is essential for experiential learning (Barr, 2013; Poore et al., 2014). Tasks included prescribing for the case, determining doses and predicting adverse effects. Students were also required to role-play consultations with each other. The activities of the workshops were complex in nature and utilised the students' ability to find new information and apply this within the framework they had been taught previously.

Clinical dilemmas were addressed by presentation of evidence, with inclusion of references where appropriate. The Australian Medicines Handbook (AMH) (Australian Medicines Handbook, 2019) was a recommended text for students in both programs and was available during the workshops as an authentic decision support tool. An icebreaker activity was included on the worksheet for the session to deliberately focus students' attention on the interprofessional make-up of the group.

Medicine students were scheduled to attend two interprofessional learning workshops during their clinical attachment in medicine as part of an existing tutorial program. Attendance was not mandated but was expected. For pharmacy students the sessions were in place of revision sessions which were also optional but strongly encouraged. For both student groups, the workshop sessions served as a way to achieve greater clinical depth for previously taught concepts in addition to providing a formal interprofessional learning

opportunity. Due to disparate cohort sizes, pharmacy students were invited to attend four sessions in total, in the hope of providing balanced numbers of medicine and pharmacy students in each workshop (Figure 2).

Workshop content

The workshop content was planned to draw on prior learning in the areas of medication adverse effects, balancing the harms and benefits of medications, and the adjustment of doses for variation in renal and liver function (topics common to both programs) (Table 3).

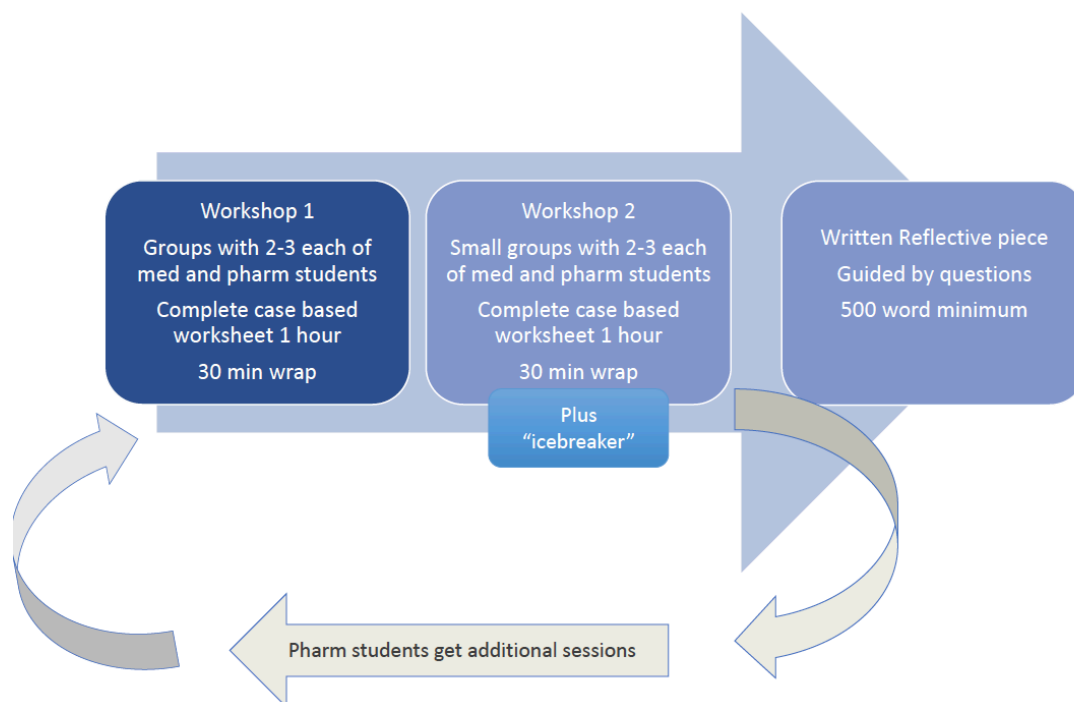


Figure 2. Workshop schedule.

Table 3

Pharmacotherapeutics Content for Interprofessional Education Workshop Sessions

<p>Individualisation of therapy</p> <ul style="list-style-type: none"> • Harms vs benefits of therapy • Impact of patient factors • Dose adjustment
<p>Adverse effects in clinical practice- awareness and management</p>
<p>Patient counselling</p>
<p>Specific medications:</p> <ul style="list-style-type: none"> • Diuretics • ACE inhibitors • NSAIDS • Anticoagulation • Allopurinol • Colchicine
<p>Specific clinical conditions:</p> <ul style="list-style-type: none"> • Cardiac failure • Gout • Osteoarthritis • Cardiovascular risk • Chronic kidney disease • Hepatic impairment

Workshop facilitators

Roving tutors were present during the workshop to welcome students, oversee group work, answer student queries and ensure engagement of all groups. Importantly, tutors were interprofessional learning ‘champions’ from both professions and demonstrated respectful communication and collaborative behaviour. Each workshop included a summary (wrap) component which occurred after completion of small group tasks. This summary component took the form of a 30-minute presentation to the whole student group reflecting back issues from the cases that had been raised in the smaller groups and inviting comments from the wider group. Tutors were asked to report back from small group discussions to inform the content of the summary presentation and ensure relevance of the material and level of

learning for the particular group of learners. Thus, the summary content would likely vary somewhat between sessions, depending on which issues the groups raised.

1.5.4 Participant Sampling and Recruitment

All students enrolled in Year 4 of the MBBS at University of Adelaide and Year three of B.Pharm at University of South Australia in 2015 were eligible to participate in the study. Participation may have included one or both of the following: consent to use their written reflective pieces for the study and participation in a semi-structured interview in 2016 (one year after their attendance at interprofessional learning workshops)

Table 4

Details of Eligible Student Participants

MBBS- year 4 cohort	B.Pharm - Year 3 cohort
(198 students)	(114 students)
Undergraduates	Undergraduates
Predominantly school leavers	School leavers/ tertiary transfers
Mean age = 21.6 years (range 20-44, SD = 2.13)	Mean age = 21.9 years (range 19-32, SD = 2.25)
45% women	64.7% women

Recruitment for all student participants was by university email (see appendix 7.3.3 for email invitations). Recruitment occurred following completion of both the interprofessional workshops and submission of written reflective pieces, and after course grades had been finalised. A further invitation was sent the following year (2016) to invite students to attend semi-structured interviews.

1.5.5 Data Collection

The research utilised two types of qualitative data: students' written reflections and

semi-structured interviews.

Data collection: students' written reflections

In order to maximise the interprofessional learning from the workshops, a reflective writing activity was included (see Fig.2. workshop schedule). The questions given to students to guide their reflective writing exercise were designed to provide a mixture of levels of reflection including process, content and premise (Kitchenham, 2008; Mezirow, 1995). The majority of questions used to guide this reflective writing piece can be categorised as “premise reflection” (Mezirow, 1995, p.45), with one question targeting content and one targeting process. The aim was to promote a deeper level of reflection. It was recognised that deeper levels of reflection are less frequent and may be more difficult to achieve, thus it was felt important to steer students toward this if possible. Although the questions are largely closed in type, the written piece was required to be at least 500 words in length, which necessitated more in-depth answers rather than simple yes/no responses. Students in medicine had limited prior experience in reflective writing during other courses, primarily in the year prior after a workshop session with cancer survivors. In contrast, reflective writing was not an element of the pharmacy students' courses prior to this experience.

Table 5

*Reflective Writing Questions for Students***Reflective writing questions for students:**

Following participation in two workshops, students were asked to complete a reflective writing piece. They were given the following questions to guide their writing.

Please answer the following questions in at least 500 words:

1. Were you uncomfortable working with students from another profession in the workshops? In what way?
2. Has learning with students from another healthcare profession helped you understand their role more clearly? How/how not?
3. How valuable is it to learn with students from another profession? Why/why not?
4. Were the other students at a different level of learning to you?
5. Can you define your professional role in a healthcare team?
6. How does the role of a pharmacist differ from that of a doctor?
7. What will you do differently, following these workshops?

Questions can be categorised as targeting different types of reflection (Mezirow, 1995)

Content: Question 4.

Process: Question 1.

Premise: Questions 2, 3, 5, 6 & 7.

For use of reflective pieces, a return email or completed written consent form were accepted as consent. Students who consented had their written reflections downloaded from the learning management system by university professional staff. Written pieces were de-identified and assigned an identification code comprising a letter (M= medical student, P= pharmacy student), and a number. 43 students participated in this part of the study: 19 pharmacy students and 24 medicine students. The mean age of medical students was 21 years (range 20-24) with 58% being women. The pharmacy students' mean age was 22 years (range 19-32) with 76% being women. Medicine students were recruited after attendance at the second workshop, whereas pharmacy students were recruited at the conclusion of all

workshops due to the differences in scheduling between programs. Consequently, data became available at different time points.

Semi-structured interview data collection

Students were invited to participate in semi-structured interviews about their interaction with the other professional group. Interviews were 30-40 minutes in length. Participation in the research was voluntary and there was no impact on grades. Nine medicine and seven pharmacy students participated in the interviews which were audiotaped. All interviews were transcribed and assigned a unique ID number by administrative staff. Interviews were conducted by doctors undertaking a six-month term of further training (post qualification) in medical education. The interviewing doctors were not involved with teaching or assessment of the participants. The interviewers did not participate in the design or analysis of the study.

Interviews were audio recorded and later transcribed. Interview transcripts were assigned an identification code comprising a letter (M= medical student, P= pharmacy student) and a number (these were not linked to identification codes of written reflections). Formal consent forms were signed at the time of interviews.

Data storage

De-identified data (including written reflections, audio recordings and transcripts of audio recordings) were stored on a university computer with password protection. Unique identifier codes for all data, linked to student ID numbers, were stored in a password protected spreadsheet.

1.5.6 Data Analysis

Thematic analysis

Thematic analysis has a clearly defined procedure which can be applied across a variety of theoretical frameworks and paradigms was chosen as a suitable tool for this

research (Braun & Clarke, 2012). Inductive thematic analysis was considered the most suitable approach for the research questions as it provides a rich and nuanced account of the qualitative data (Braun & Clarke, 2012). In inductive coding, the researcher actively seeks answers to the research questions in the data and must acknowledge their own role in the process and the necessary influences of their own beliefs and epistemology (Braun & Clarke, 2012). In this thesis I have reflexively stated my influences as a researcher and educator. I also acknowledge my constructivist world view and the theoretical models chosen, as these are fundamental to the interpretation of the data in reflexive thematic analysis (Braun & Clarke, 2019).

Both written reflective pieces and interview transcripts were analysed using a thematic analysis approach, as outlined by Braun and Clarke (Braun & Clarke, 2012). Analysis firstly involved familiarisation with the data by reading and re-reading the data to establish the themes it contained. Inductive coding of individual pieces was then performed. Following this first examination of the data, the other two members of the research team (who were also the PhD supervisors) sampled the raw data to determine whether the reported themes were visible to multiple coders and to ensure that no themes were missed. Any additional themes found were discussed by the group and added to the coded data set.

Once saturation had been reached ($n= 18$ for written reflections and $n= 10$ for interviews), no further codes were included in the analysis. The codes were grouped into subthemes and the themes were linked explicitly to the research questions. The codes, subthemes and themes were then mapped to establish how they relate to each other in the broad context of the research questions. A second round of coding was then performed to gain greater depth of analysis beyond simply using themes according to the questions that had been posed to guide the students' reflective pieces. The approach taken was to look at the layer below the answers to questions and draw out the subtext of the students' comments.

Themes, subthemes and codes were listed in a matrix with illustrative quotes from individual participants for each code. Later, codes were collapsed where it was apparent that there were similar themes or clustering of themes. The matrix was also populated with links to theory, where applicable.

For the written reflective pieces, data from medicine students were analysed first. Once data from pharmacy students became available, these were similarly analysed. Care was taken to include any new themes arising in the pharmacy data that had not been seen in the medicine pieces. The pharmacy student codes were then combined with existing coded data. This was a complex process as many codes were the same or similar to the medical student data but in some cases, combining the additional data caused a rework of themes and subthemes to properly incorporate the additional codes.

For the interview data transcripts from both medicine and pharmacy were analysed as a single data set.

1.6 Academic and Scientific Rigour

1.6.1 Ethical Considerations

Formal ethics approval was granted by The University of Adelaide, School of Psychology HREC subcommittee (approval numbers 15/02, 16/19), The University of South Australia HREC and the Flinders Social and Behavioural Ethics Committee (OH-00047, OH-00087). Committees overseeing curriculum content at University of South Australia Pharmacy and University of Adelaide Medical School were also informed of the project. This was not a requirement of the ethics committees but had the advantage of informing faculty staff about new educational initiatives and ensured that the demands on students to participate in multiple studies were monitored.

The main ethical consideration was that of coercion. As the researcher was both the principal investigator and a senior lecturer within the undergraduate MBBS program there

was potential for students to feel that their participation was expected or that refusal may have adverse effect on their grades. Therefore, invitations to participate in the study were sent by university professional staff (rather than the investigator). Participation was anonymous, which may have assisted in reducing concern about any negative impact on assessment. The possibility of coercion was less likely for University of South Australia students as the researcher was not a lecturer in their program and had no influence over their assessment. There was also potential for confusion, since attendance at workshop sessions and completion of the reflective writing task was expected (although not strictly compulsory) and monitored by clinical attachment supervisors. The consent for use of reflective writing in the study was a separate process and information was provided to this effect (see information sheets and consent forms appendices 7.3.4, 7.3.5). The workshop sessions replaced existing sessions in both programs and therefore did not require additional time allocation for tutors and students.

1.6.2 Ensuring Quality

The 'big-tent' criteria (Tracy, 2010) can be applied as a framework for ensuring quality in qualitative research and are as follows: worthy topic, rich rigour, sincerity, credibility, resonance, significant contribution, and ethical and meaningful coherence. The topic of interprofessional learning as it pertains to this research is worthy. The need to facilitate collaborative behaviours in health professions students is a matter of safety and quality. A deeper understanding of how medicine and pharmacy students view interprofessional interactions will add to the literature and the understanding of how to support interprofessional education. The challenge of providing interprofessional learning in the context of a powerful hidden curriculum (Hafferty & Castellani, 2009) which promotes negative views on teamwork also makes this a worthy topic. Triangulation between different data sources and types provides rigour in this research.

The use of multiple researchers to check coding in thematic analyses served to ensure

that themes identified were present and none were missed for trustworthiness and rigour. Sincerity is an important element in any research. I utilised reflexivity throughout the process and maintained honesty and transparency in the conduct of this research. Where the data were insufficient for statistical analysis this was acknowledged, and the research process reviewed accordingly. Credibility is addressed through the use of multiple methods of data collection and allowing the voice of different students to be represented in the data.

Apart from procedural ethics (these formal processes and approval are described elsewhere), the research approach encompassed situational and relational ethics. As a researcher, I reflected on my impact on the students and my colleagues frequently, and at all times I was conscious of the need of mutual respect. 'Exiting ethics' were also considered. I have committed to continue my hands-on involvement with the interprofessional teaching but will also endeavour to widen the tutor circle to improve sustainability of the program.

1.6.3 Reflexivity- My Role and Position as a Researcher and in Relation to the Participants

My background and position were important in this project as they influenced the perspective and knowledge I brought to the research. I have been a doctor for 29 years. My clinical training has been in general internal medicine and clinical pharmacology although, notably, I spent a significant amount of time in primary care at the start of my career, working with complex medical and social issues as part of an interprofessional team managing addiction, sexual health and people living with HIV and Hepatitis C infection. I am currently an active senior clinician working in both acute and chronic medicine in a large tertiary hospital. I am part of an inpatient unit, which is a cohesive interprofessional team environment with a full complement of students and trainees on the unit from medicine, nursing and pharmacy programs. I also work in a complex care clinic with an

interprofessional team comprising nurses, psychologists, physiotherapists, occupational therapists, trainees, hospital pharmacists, and community pharmacists.

My other role is as an educator with a formal appointment at the University of Adelaide (Adelaide Medical School). I oversee the Clinical Practice stream of the MBBS program and coordinate the clinical skills course for Year 3 students across multiple hospital sites which is an important transition for their entry to clinical placements in Years 4 to 6. I have direct coordinator responsibilities of the formal teaching course in the final year of the MBBS program (which prepares students for their entry into the workforce as interns). In both roles I oversee the learning and clinical practice of medical students and trainees in the context of the patient care environment of a large teaching hospital and affiliated university. I have a detailed view of the skills medical students and trainees require at each level to progress through the continuum from undergraduate to postgraduate training. I have also been involved in providing education for community pharmacists for many years. This has given me a clear understanding of their perspective in dealing with medical practitioners.

I greatly enjoy practising as part of an interprofessional team and this was a major driver for me to leave the isolation of primary care and pursue further specialty training. My deep and personal commitment to interprofessional practice is evident in my daily work where I strive to include all members and ensure that all voices are heard. I see this as an issue of safety and quality since the failure to include all voices risks the omission of important information and input to patient care. I believe the differences in power and status of members can lead to dysfunction within the interprofessional team.

As a clinician and medical educator, I have been trained in the biomedical approach and have a strong grounding in the quantitative research paradigm. However, in undertaking this thesis I pursued training in qualitative research methods as a necessity. This learning has formed a significant aspect of my candidature, transforming from novice to qualitative

researcher and challenging my assumptions about evidence. This journey is further explored in Chapter 2. The lack of engagement by students in the quantitative aspects of the research for this thesis was another challenging aspect and is described and discussed in Chapter 3. As the principal researcher I was involved in designing the educational workshops and evaluation of the outcomes along with my co-researchers and other stakeholders in the educational environment. My insider status afforded an intimate knowledge of the curriculum, the culture within the medical program, the culture within clinical practice environments, and the relationship between teachers and practitioners in pharmacy and medicine. This knowledge and perspective were invaluable in both shaping the workshops and interpreting the outcomes.

Chapter 2. The Clinician Educator as Qualitative Researcher

2.1 Statement of Author Contribution

Title of Paper	The clinician educator as qualitative researcher.
Publication Status	Published 2019
Publication Details	Thomas, J. (2019). The clinician educator as qualitative researcher. <i>Clinical Teacher</i> , 16(6), 646-648. doi: 10.1111/tct.12977

Name of Principal Author (Candidate)	Josephine S. Thomas
Contribution to the Paper	Performed literature review for the article. Wrote the manuscript, acted as corresponding author, with journal. Revised manuscript in response to comments from supervisors and reviewers.
Overall percentage (%)	100
Certification:	This paper reports on original research I conducted during the period of my Higher Degree by Research candidature and is not subject to any obligations or contractual agreements with a third party that would constrain its inclusion in this thesis. I am the primary author of this paper.
Signature	<hr style="display: inline-block; width: 200px; vertical-align: middle;"/> Date 23 August 2020

2.2 The Clinician Educator as Qualitative Researcher

As a specialist physician and clinical educator, I work across university and hospital-based medical practice, providing acute inpatient and chronic outpatient care as a member of an interprofessional team. Like all medical practitioners, I have been educated in the medical model and have been taught to value randomised controlled trials as the gold standard in research. In my specialty general medicine and clinical pharmacology training and subsequent career, I chose to focus on scholarly activities that were applicable to clinical practice such as guideline writing and teaching. As a clinician educator, I was further indoctrinated and invested in the positivist paradigm of quantitative research. My clinical career has often involved working with other professionals and I enjoy collaborative practice.

Hence, my most recent training has been within a PhD program, where I am exploring aspects of interprofessional learning between pharmacy and medicine students.

I encountered the qualitative paradigm as a novice but arrived with preformed values and attitudes, particularly around levels of evidence and the inherent value of randomised controlled trials. The experience has been rewarding and enjoyable but undoubtedly the journey included dissonance around my long-held understanding about the nature of scientific evidence. This came most sharply into focus when discussing my PhD with medical colleagues and hearing their contempt for lack of ‘hard outcomes’ in educational research. This negative attitude to qualitative research undoubtedly impacted on my perception of the value of my own research and is echoed in the lack of prominence it receives in the literature and the disparate rates of publication in medical journals. The assertion that qualitative research holds little value for the reader has been cited as one reason why high impact journals do not publish qualitative studies, although this has been refuted (Greenhalgh et al., 2016).

The pace of my day-to-day life was dramatically altered during my candidature with reading, writing and reflection replacing hectic clinical decision making (figure.1). I thoroughly enjoyed the opportunity to slow down, indulge in reflection and read more widely. The transition to qualitative researcher required a significant shift in my knowledge, values and attitudes. In order to become a researcher in this new paradigm, I had to look outside medicine and medical education. Therefore, I embraced an inherent need to become interprofessional in order to learn these methods. As part of the transition, my position on the value of research methods has evolved. I believe the richness of data provided by qualitative methods can give an understanding that numbers will fail to achieve, and this is a good fit for educational research. Furthermore, as the context for any data is vital to a comprehensive understanding, I see the narrative around quantitative research as extremely valuable.

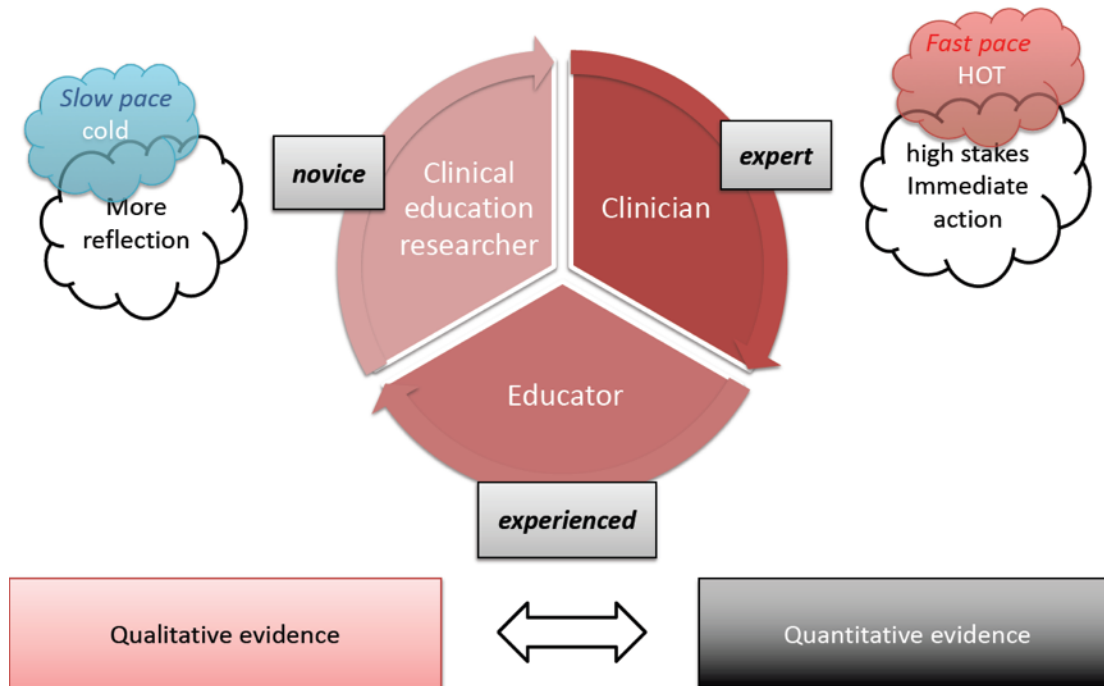


Figure 3. The transition to qualitative researcher.

Reflexivity is an awareness of how the researcher's role affects the research process and outcomes, and vice versa (Symon & Cassell, 2012). Reflexivity involves interpretation as well as reflection; thinking about experiences and questioning ways of doing. This interpretation also takes account of assumptions on the part of the researcher including their values and attitudes (Ramani, Könings, Mann & van der Vleuten, 2018). Thus, in qualitative research, it is essential for a researcher to reflect on the methods and their position in the data. The role of the educator as a researcher can be seen as a conflict of interest due to the student-teacher power differential and self-awareness is crucial in this context (Brown, 2010). However, reflection is not a routine occurrence in quantitative clinical education research or practice which seems a missed opportunity. The value of reflexivity for clinical practice has been noted in medical education literature due to the positive impact of self-awareness on the doctor-patient relationship (Verdonk, 2015). Reflexivity should be part of all clinical practice and research.

Recognising and acknowledging the inevitable dissonance that is part of this journey has been helpful. Discussion with experienced researchers is a way to add other perspectives, as is sharing experiences with other learners. Having been reluctant to pursue a research focus in the past, I found it useful to begin my journey with course work as a lead-in and was immediately connected to other learners in this setting. Looking to the qualitative research literature was particularly affirming, giving the sense of a wider community of practice, facing common issues, and often providing further insights. Supervision, with an appropriate level of support that matches a candidate's needs, is essential. In particular, I benefited from an understanding of the skills and experience I brought to the candidature.

In any transition, sharing experiences and reflection are valuable tools for managing the inevitable dissonance that arises. For researchers, a variety of formal and informal meetings can provide opportunity for connection with like-minded people. It is crucial for researchers across all paradigms to reflect and be reflexive. A greater prominence of the qualitative research paradigm in medical education curricula may assist in promoting the value and practice of reflexivity for others.

Chapter 3. Improving the Participation of Students in Health Professional Education

Research

3.1 Statement of Author Contributions

Title of Paper	Students as participants in health professional education research
Publication Status	Published 2019
Publication Details	Thomas, J., Kumar, K., & Chur-Hansen, A. (2019). Improving the participation of students in health professional education research. <i>Focus on Health Professional Education: A Multiprofessional Journal</i> , 20(3), 84-96.

Name of Principal Author (Candidate)	Josephine S. Thomas		
Contribution to the Paper	Performed literature review for the paper, wrote the manuscript, acted as corresponding author, and revised the manuscript in response to comments from supervisors and reviewers.		
Overall percentage (%)	85		
Certification:	This paper reports on original research I conducted during the period of my Higher Degree by Research candidature and is not subject to any obligations or contractual agreements with a third party that would constrain its inclusion in this thesis. I am the primary author of this paper.		
Signature		Date	24 August 2020

Name of Co-Author	Koshila Kumar		
Contribution to the Paper	Reviewed and assisted with manuscript revision and editing.		
Signature		Date	24/08/2020

Name of Co-Author	Anna Chur-Hansen		
Contribution to the Paper	Reviewed and assisted with manuscript revision and editing.		
Signature		Date	24.8.20

3.2 Abstract

Health professional education (HPE) has grown as a field of research, with an increasing number of publications since the 1990s. Interprofessional education is a specific area of growth with ongoing debate in the literature, at least in part due to the challenges that exist in implementation with further research needed to inform ongoing practice. Participant recruitment is a major challenge and poor participation rates lead to bias and a failure to demonstrate outcomes. There is a lack of information about why students decline to participate in research to inform and improve education. Motivation for volunteerism in other contexts and recruitment of human participants in other types of research are examined as a way to understand the likely motivations of student participants. Disincentives to participate include time commitment, survey fatigue and a poor understanding of the value of HPE research and the processes involved. The ethical considerations for teacher-researchers add another layer of complexity to recruitment. A multifaceted approach, involving all stakeholders and targeting known influences, is needed to improve recruitment in HPE research, and clear communication of the research rationale and its potential impact on curriculum design is essential. Explicit communication and adequate information to allow informed student choice are also required, while improved literacy in HPE research may provide students with a better basis for decision making when considering participation. In addition, partnership and student co-design could be a mechanism for more meaningful engagement.

3.3 Introduction

Research and scholarship are essential for the advancement of HPE (Heflin, DeMeo, Nagler, & Hockenberry, 2016; Keune et al., 2013; Schuwirth & Durning, 2018). Such research requires the active participation of a range of stakeholders. Due to their unique position within the HPE system, students, as stakeholders, can provide valuable insight into different aspects of teaching and learning activities and processes and promote innovation (Cook-Sather et al., 2014; Matthews et al., 2018). HPE research includes numerous studies involving undergraduate and postgraduate health professions students, however, very few of these studies discuss the complexities and challenges of the involvement of students as research participants. In the context of a broader discussion about the responsible conduct of educational research in the health professions (Maggio, Artino, Picho, & Driessen, 2018), student participation in HPE research deserves further scrutiny.

Tertiary education literature has noted the challenges encountered regarding student participation in research. Reflecting the problems with recruitment encountered in other areas of research involving human participants (McDonald et al., 2006), authors have noted that participation rates of one third and attrition rates of 20% are common in research involving university students (Cyr et al., 2013). Studies which fail to achieve their recruitment targets are unlikely to be published, thus making it difficult for researchers to learn from their experience. The validity of educational research has been questioned in light of poor participation rates and the high rate of withdrawal in longitudinal studies raises the question of bias (Callahan et al., 2007; Sarpel et al., 2013; Walsh, 2013). Similarly, the credibility and usefulness of educational research may be questioned due to the response bias associated with those students who do volunteer to participate and how representative they are of the larger student cohort (Walsh, 2014). Participants in longitudinal educational research are more likely to have performed better academically and less likely to come from a minority

group which may limit transferability of results to the wider student population (Callahan et al., 2007). The ethical issues involved in working with students as research participants in educational research also add to the complexity since the researchers may also be the teachers (Brown, 2010; Chen, 2011; Ridley, 2009; Voo, 2009; Walsh, 2014).

Whilst the problem of recruitment in HPE research is acknowledged, student participation in HPE research is not well articulated in relevant literature (Chen, 2011). Currently, there is little published literature exploring the reasons why students do not participate in educational research (Khatamian Far, 2018; Stovel, Ginsburg, Stroud, Cavalcanti, & Devine, 2018). However, it is important to develop more nuanced understandings about the elements that influence student participation in HPE research if we are to meaningfully engage and empower this valuable stakeholder group.

The aim of this paper is to illustrate the multiple interrelated influences on student participation in HPE research. In the next section, the motivations and disincentives for participation and the ethical complexities characterising health professions students' participation in educational research are considered. The paper will conclude with an exploration of what the HPE research community might do to improve student participation in educational research.

3.4 Influences on Student Participation

In order to understand the factors influencing student participation, we looked outside of the education research literature to the clinical trials literature and the practice of 'volunteering' in a broader sense. This research provides a framework to situate and understand the influences on student participation in educational research.

Motivation to participate

Exploration of the practice of 'volunteering' may afford insights into students' motivation to participate in research. Although complex and multifaceted, with variation

between individuals, the motivation to volunteer can be largely distilled down to benefit to self and benefit to others. Benefit to self encompasses both intrinsic and extrinsic rewards. These two categories are interdependent and are also impacted by the expectations of others. Commonly cited personal drivers for volunteering are the desire to help others and to feel useful or needed (Cuskelly, Hoye, & Auld, 2006; Holdsworth, 2010). Other personal benefits include social contact, gaining new skills, improved career opportunities and financial reward (Edwards et al., 2002; Jenkins & Fallowfield, 2000; Limkakeng et al., 2013; McCann, Campbell & Entwistle, 2010). In some cases, volunteers will be driven to meet the normative expectations of others by donating their time or skills (Einolf, & Chambré, 2011; Holdsworth, 2010). When focusing specifically on students, the subtle or overt potential for students to gain a real or perceived personal advantage (for example, opportunity for improving performance through participation in additional educational activities or being seen in a positive light by faculty) may also act as an inducement to participation (Bartholomay & Sifers, 2016; Boileau, Patenaude, & St-Onge, 2018).

Altruism, or the desire to help others, is a commonly cited motivation for participation in clinical trials research (Newington & Metcalfe, 2014). Education research may be expected to hold a similar attraction for health professions students, but educational improvement within health is perhaps not rated as highly or seen as a worthy cause in comparison to the possible health benefits clinical trials can yield. This is an aspect that is yet to be explored in empirical research. Moreover, the translation of the findings of educational research into teaching and learning practices and curricula occurs over the long-term and may be unseen by students. This lack of immediacy may reduce the perceived value and benefit (either to oneself or others) of participating in educational research. Whilst altruism might incline a student towards participating, it does not always ensure participation (McCann et al., 2010). Furthermore, even those who are altruistically oriented are more likely to

participate if they believe they will personally benefit (McCann, Campbell, & Entwistle, 2013).

External incentives (mostly financial) are also regarded as positively influencing participation rates, and incentives are often used in research studies to compensate participants for their time and contribution (Edwards et al., 2002; Phillips, Reddy, & Durning, 2016; Thornton et al., 2016). However, such rewards and incentives can have unintended negative consequences and result in an opposite effect to that which is intended. For some people, the intrinsic drive to volunteer may be lost or diluted with the provision of payment or incentives. The desire to benefit others is linked to intrinsic motivation, and this is more enduring and rewarding than extrinsic motivation arising from incentives (Holdsworth, 2010; Warburton & Smith, 2003). Monetary incentives are sometimes perceived as implying that the task is difficult or unpleasant (requiring ‘compensation’), and this may act as a disincentive (Gneezy, Meier, & Rey-Biel, 2011). However, there are established models in which students are routinely rewarded for participation in research, for example, in undergraduate psychology, where course credits are awarded (School of Psychological Sciences, 2017). Although this is seen by some as a valuable way to promote understanding of research and research conduct, the ethics of this approach have been questioned (Cleary, Walter, & Jackson, 2015). Of note, most published HPE research studies do not describe incentives for participation (Stovel et al., 2018).

Disincentives for participation

Time required to participate in research is a well-recognised disincentive (Christakis, 1985; Keune et al., 2013; Sarpel et al., 2013). Health professions students typically have heavy course workloads, including clinical attachments and therefore additional time commitments for research are likely to be perceived as a significant inconvenience. Overload or fatigue due to multiple evaluators and HPE researchers targeting the same student cohort

can also be an issue for students (Adams & Umbach, 2011). This further adds to concerns about whether student participants are representative of the wider student group, as those who are less academically sound or have other commitments may be less inclined to participate due to time constraints (Callahan et al., 2007).

More broadly, the local educational context, culture, expectations and beliefs are also likely to be influential. There are also peer influences on participation. Conformity is a powerful and pervasive influence on how people behave and interact in groups which may have implications for participation, non-participation and bias in HPE research (Beran, Kaba, Caird, & McLaughlin, 2014). An understanding of student norms of participation and the factors that influence this is important. The wider context of staff and community expectations in this regard may be equally important. In some programs, the expectation from staff is that students routinely participate in education research as part of their learning (School of Psychological Sciences, 2017).

Research literacy

Students' level of familiarity with educational research is an important consideration. It is possible that a failure to make explicit the value of HPE research and the processes involved is a less obvious but critical negative influence on student participation. There is a paucity of educational research training in many health professions programs, and where students are trained in research, it is heavily weighted towards the clinical paradigm. The differences between the clinical and educational paradigms are well established in literature (Schuwirth & Durning, 2018). Thus, students may be unfamiliar with the conduct of health professional education research, including, for instance, qualitative study designs and how research informs teaching, learning and curricula. This also intersects with students' capacity to see the relevance and benefit of research to themselves or others.

The often-blurred distinction between education research and evaluation of teaching

and courses may unduly negatively influence student participation in research. There is evidence of student scepticism of the value of university surveys to evaluate higher education programs (Spooren & Christiaens, 2017). Although disgruntled students may utilise evaluation surveys for their complaints, they often perceive that few actions result from them (Uttl et al., 2017). This may, in part, reflect poor communication from staff about how the outcomes of evaluation have been used to implement program and curriculum improvement. This is a vicious cycle since university surveys for evaluation of teaching are widely dismissed by teaching staff as poor quality evidence due to low participation rates, and participation in evaluation is enhanced by student perception that teachers will utilise the results (Hornstein & Law, 2017; Iqbal, Lee, Pearson, & Albon, 2016; Uttl et al., 2017). This conflation between educational evaluation and research can engender poor perceptions and attitudes about educational research which impact on intended and actual participation. Both HPE evaluation and research require high levels of student participation to yield meaningful results and inform educational improvement.

Ethical considerations

The ethical considerations associated with educational research are immense and add another layer of complexity to student participation in health professions education research. The teacher as researcher has generated considerable debate. The main ethical concern is that of coercion (Aycock & Currie, 2013; Sarpel et al., 2013). Some maintain that a teacher drawing upon their own student cohort as participants is fundamentally unethical due to the power imbalance between student and teacher or educational institution (Ferguson, Yonge & Myrick, 2004). This may compromise the nature and quality of the data that are collected. Other authors have noted the blurring of boundaries and roles that can occur when a teacher takes on the role of researcher of their own teaching program (Boileau et al., 2018; Regan et al., 2012). Parallels can be drawn between the conflicts of interest experienced by

the physician-researcher and educator-researcher (Henry & Wright, 2001). The double agency of fulfilling two roles simultaneously may lead to ethical threats at various stages of the research process: recruitment, consent, confidentiality and participant withdrawal (Ferguson et al., 2004).

Although some have suggested that health professions students are better informed about research compared to many target populations, their position may render them more vulnerable to perceived pressure or coercion by teacher-researchers (Bartholomay & Sifers, 2016). The validity of informed consent in the context of the student-teacher power differential is questionable, and the decision to participate may be significantly influenced by the (perceived or real) potential effect on grades or career. These ethical considerations have major relevance for educational research in terms of balancing the needs of teachers and institutions to examine and critique educational practices through evaluation and research and what may be considered as reasonable means of engaging students in research. Many have argued that education research is of clear benefit to students and to the curriculum and have suggested that explicit voluntary consent is not warranted (DuBois, 2002; Forester & McWhorter, 2005).

The level of scrutiny of educational research by institutional ethics committees and other bodies compounds the problem. In the past, HPE research has been viewed, understood and treated in different ways by institutional ethics review committees. Differing levels of scrutiny of the educational research process - ranging from exemption to full review - has meant variability in the protection offered to participants, including students (Chen, 2011; Regan et al., 2012). With the expansion of the field, however, the review of education research has become more uniform and most studies usually require formal ethics approval, or at least need to demonstrate adherence to ethical principles for publication (Boileau et al., 2018). Still, in some instances, the lack of educational research expertise in these committees

can add to the disparity in the review processes (Brown, 2010). The lack of distinction between evaluation and research mentioned earlier can also add to the confusion.

Despite being categorised as low risk, HPE research can have a range of unforeseen consequences for participants. For students, these may include diversion from academic commitments, psychological effects, delayed responses to the research phenomenon being studied, and the establishment of new dynamics. Unintended psychological effects may occur when the topic of study encroaches on a sensitive topic in health education (for example, learning about death and dying), and this impact may be felt after the study has concluded, leaving the student without a clear avenue for seeking assistance. In addition, despite attempts to preserve anonymity, a teacher-researcher may recognise a participant and react consciously or unconsciously to their comments. The unintended consequences of educational research participation remain an area where evidence is lacking.

The above analysis has illustrated that there are multiple interrelated influences on student participation in educational research. While a number of ethical concerns have also been raised, interestingly, students do not appear to have the same concerns about risk and, reportedly, value educational research (Forester & McWhorter, 2005; Sarpel et al., 2013), yet their participation in educational research is poor.

3.5 Recommendations

In this section, what can be done to improve student participation in educational research within the health professions will be discussed. The strategies and potential solutions to the problem of students as participants in health profession education research will be complex and multifaceted.

Educators and researchers are familiar with the need to understand local context and the multiple factors that may influence an educational method (Schuwirth & Durning, 2018). A similar approach will be needed in facilitating student recruitment into educational

research. Recent evidence from the clinical trials context has identified that tailored approaches which address the local context are successful in improving recruitment (Rooshenas et al., 2019). Notably, the majority of issues identified pertain to communication of the trial information to eligible participants. This implies that clear communication about the purpose, potential outcomes and application of educational research, the commitment required of participants and how their data will be used is paramount. This can foster mutual respect between researchers and participants and enable students to make informed choices about participating in educational research. Multiple and complementary modes of communication should be utilised to reach all potential participants. If provided with sufficient disclosure and opportunity to consider options, students may be more likely to consent to participate (Henry & Wright, 2001).

Students are a hugely diverse group and will have different perspectives and motivations for participating in educational research. Context will dictate which factors are most important in harnessing individual student motivation to participate. Some students will need to be shown how educational research can exert a beneficial influence on curriculum and have the benefit to self and others made more explicit and visible. Thus, they will require a level of immersion in the educational research paradigm to ensure they have the opportunity to better understand the implications of such research. Students may also benefit from a more comprehensive approach, where educational theory and education research methodology (particularly qualitative and mixed methods) are embedded into the curricula of health professions to enhance research literacy. Participation in educational research could be viewed as an educational activity in itself if sufficient information and scaffolding is provided to participants so they can engage meaningfully (Chen, 2011).

While teacher-researchers need to ensure effort is directed at engaging students in educational research in order to gain insights into teaching and learning activities and

curriculum, they must also reflect on and be vigilant about the ethical issues inherent in studying their own students (Boileau et al., 2018; Cleary et al., 2015). Staff who are not involved in a dependent relationship with students should be selected to communicate with and recruit students to avoid coercion and pressure (Bartholomay & Sifers, 2016). Role modelling excellence in the responsible design and ethical conduct of HPE research (Maggio et al., 2018) should be a goal of all educators. Teacher-researchers and other educational researchers need to pay careful attention to the ethical principles of respect, welfare and justice (Boileau et al., 2018).

Researchers should avoid collecting personal information unless it is directly relevant to the research to safeguard confidentiality (Boileau et al., 2018). An opt-out strategy of recruitment is more likely to increase participation (compared with opt-in recruitment), but researchers should ensure that they address any perception of adverse consequences from non-participation. If incentives such as course credits are offered, there must be alternatives of equal time and effort available (Cleary et al., 2015). Some authors have recommended specialised HPE research review panels to improve quality and consistency of review (Heflin et al., 2016). Cultivating expertise in education research within institutional ethics review committees will assist in producing high quality research protocols, enabling role modelling of ethical principles in research design and conduct. Clarity about when data are collected for evaluation or for research is imperative to ensure appropriate ethical review (Sandars, 2009).

Larger collaborative HPE research groups afford greater support for design and implementation than can be afforded a lone teacher-researcher. A coordinated approach among researchers may also address, in part, the issue of participant overload and fatigue and would likely increase the quality of those studies (Regan et al., 2012). An organised system allowing students to review all requests for participation in HPE research studies in the coming year may allow students to develop a better understanding of the requirements as

well as impacts of participation. The development of de-identified longitudinal educational research databases may be a way to reduce the need to repeatedly approach students for information (Cook, Andriole, Durning, Roberts, & Triola, 2010). Examples of such databases include the Medical Schools Outcome Database (MSOD) in Australia and the Research on Medical Outcomes (ROME) registry in the United States of America (Thayer et al., 2016). As with any research design, HPE researchers should ensure that all participant tasks are as efficient and streamlined as possible, as this is likely to pay dividends, particularly in retention for longitudinal studies.

Involving students as partners in co-design of educational research may be the best way to deepen their understanding of the educational paradigm. This may translate into increased participation as trusting collaborative research relationships are developed and the benefits of educational research to themselves and others is made more visible. Student researchers may be able to contribute to projects by opening up areas of poor understanding and identifying alternative communication channels, targeted recruitment strategies, effective language (ensuring clarity of communication), and building trust with participants. Student partnerships with academic staff in teaching and learning have been embraced in higher education and may provide some useful models (Cook-Sather et al., 2014; Matthews et al., 2018). Although such partnerships take on many forms, the common features are a collaborative, reciprocal process through which all participants have the opportunity to contribute to elements of teaching and learning. Positive experiences in participating in educational research may also foster student interest in future HPE career pathways.

3.6 Conclusion

HPE research is needed for the advancement of the field. As major stakeholders who are at the centre of the education process, health professions students have many insights to contribute in terms of pedagogical methods and curriculum innovations. When student

participation in educational research is not forthcoming, it represents a significant missed opportunity and impacts the quality and generalisability of findings. HPE researchers need to recognise that student participation in educational research is a complex issue, the challenges of which cannot always be easily anticipated or managed.

Improving health professions students' participation in educational research will require a multifactorial approach that may involve a range of strategies tailored to the local context. Communicating effectively about the rationale, process and outcomes of research is key to improving stakeholder engagement, and most effort should be expended on this aspect. Oversight and monitoring of research projects to ensure efficient data collection methods will help to prevent participant overload and 'survey fatigue'. More broadly, educators should seek to embed educational research training into curricula, thus developing higher levels of educational research literacy among students. Raising the expectation of student involvement may be best achieved by partnering with students in co-designing educational research.

3.7 Funding and Conflicts of Interest Statement

The authors received no funding and have no conflicts of interest.

Chapter 4. What Does Learning Together Mean for Pharmacy and Medicine Students:

is it Really About From and With?

4.1 Statement of Author Contributions

Title of Paper	What does learning together mean for pharmacy and medicine students: is it really about, from and with?
Publication Status	Published 2018
Publication Details	Thomas, J., Kumar, K., & Chur-Hansen, A. (2018). What does learning together mean for pharmacy and medicine students: is it really about from and with? <i>MedEdPublish</i> , 7(2). doi: 10.15694/mep.2018.0000110.1

Name of Principal Author (Candidate)	Josephine S. Thomas		
Contribution to the Paper	Performed literature review for the paper. Designed and conducted the study (including design and implementation of workshops, recruitment, guided reflection questions, data collection), performed data analysis, wrote the manuscript, acted as corresponding author, and revised manuscript in response to comments from supervisors and reviewers.		
Overall percentage (%)	85		
Certification:	This paper reports on original research I conducted during the period of my Higher Degree by Research candidature and is not subject to any obligations or contractual agreements with a third party that would constrain its inclusion in this thesis. I am the primary author of this paper.		
Signature		Date	24 August 2020

Name of Co-Author	Koshila Kumar		
Contribution to the Paper	Supervised development of the study. Performed independent analysis of the data as a measure of rigour. Reviewed and assisted with manuscript revision and editing.		
Signature		Date	24/08/2020

Name of Co-Author	Anna Chur-Hansen		
Contribution to the Paper	Performed independent analysis of the data as a measure of rigour. Reviewed and assisted with manuscript revision and editing.		
Signature		Date	24.8.20

4.2 Abstract

Health professions students from different professional backgrounds are often brought together under the banner of interprofessional education in an effort to improve collaborative practice. Despite the demonstrated positive impact of interprofessional education on students' knowledge, skills and attitudes, it is not clear what students think about learning with students from another health profession. The aim of this study was to explore pharmacy and medicine students' views and experiences of learning together. Participants were Year 3 pharmacy and Year 4 medicine students whose qualitative data was gathered via a written reflection. Three main themes were identified. Students were accepting of learning with the other professional group. Learning about the other groups was evident, particularly in relation to each other's roles and contributions to patient care. Learning from another professional group was the most problematic as students tended to view and treat knowledge as a commodity to be acquired from another rather than something that could be jointly developed. While medicine and pharmacy students' valued learning with and about each other, they were less likely to engage in co-constructing and sharing new meanings and thus learn from one another. To provide a basis for meaningful collaborative practice, interprofessional education needs to challenge students' fundamental assumptions, beliefs and values about learning with, from and about other professions.

4.3 Introduction

Greater collaboration between pharmacy and medicine is linked to demonstrated improved patient outcomes, particularly in the management of chronic disease (Daniels, 2008; Gallagher & Gallagher, 2012). This is a particular necessity in the pharmacotherapeutics context, as the increase in available medications and multimorbid patients add to the complexity of patient management. Polypharmacy is a common situation and the likelihood of drug interactions for these patients increases with multiple medications

(Barton et al., 2012; Roughead et al., 2013). The resulting therapeutic regimens are difficult for a single practitioner to navigate safely and require a multifaceted and collaborative approach.

A collaborative approach to care involving multiple health professionals is a complex undertaking for several reasons, including power relationships, need for common language, professional culture, workflow and workload pressures. Although medicine and pharmacy share similar roots and many common values, the two professions have evolved separate cultures and different scopes of practice (Austin, Gregory, & Martin, 2007; Gallagher & Gallagher, 2012; Gilbert, 2001). The traditional relationship between them is unequal and a power gradient is evident, with medicine as the dominant profession, afforded by societal perceptions of physicians as saving and prolonging lives (Austin et al., 2007; Barrow, McKimm, & Gasquoine, 2011). Despite the potential to contribute to patient safety, the pharmacist's role is seen as subordinate to the physician's role (Routledge, 2012). In keeping with this power gradient, most pharmacists are reluctant to question a physician's authority and opinion about prescribing, even though they have a more detailed knowledge of drug properties, interactions and effects as a result of their training (Rosenthal et al., 2010). This entrenched hierarchical relationship between pharmacy and medicine makes it difficult to establish practice that is truly collaborative. In addition, changes in the nature of pharmacy practice over recent years may further exacerbate the conflict between the professions due a perceived need to protect their own professional territory (Rosenthal et al., 2010).

Interprofessional education is an approach to enhancing the contact and learning between different professional groups in order to improve the future collaborative practice of health professionals (Greene et al., 1996). The widely accepted definition of interprofessional education is where "students from two or more professions learn about, from and with each other to improve collaboration" (World Health Organization, 2010, p. 7). Many studies have

demonstrated positive impacts of interprofessional education on health professional students' attitudes, knowledge, skills and behaviours, and in some cases, these have been shown to translate into later practice (Reeves et al., 2016a; Reeves et al., 2008; Tolleson et al., 2016). Furthermore, the literature shows that students' attitudes to interprofessional practice often improves after contact with another professional group (Van Winkle et al., 2012; Whitehead & Kuper, 2012). Students also rate interprofessional education as a positive experience, with the overarching sentiment being that they believe that interprofessional education is worthwhile. Despite an abundance of evidence regarding the outcomes of interprofessional education, what is missing is a more nuanced understanding of what pre-licensure students think and experience in learning with students from another professional group. This study explores pharmacy and medicine students' views and experience of learning with another health profession. We posed the research question: What and how do students think they learn with, from and about each other?

4.4 Methods

The relevant institutional Ethics Committee granted ethics approval.

Context and participants

The participants in this study were undergraduate pharmacy and medical students from two universities in Australia. The medical student cohort comprised 198 Year 4 students and the pharmacy cohort comprised 114 Year 3 students. Undergraduate medicine and pharmacy programs in Australia have predominantly secondary school leaver entry and are 6- and 4-year programs respectively. Students provided written consent and participation in the research was voluntary. Forty-three students participated in the study. The mean age of the medical students was 21 years (range 20-24), with 58% being female, whilst the pharmacy students mean age was 22 years (range 19-32), with 76% being female.

Data collection

Data were collected via a reflective writing activity. This activity was designed to probe participants for their views about learning with students from another health profession.

Data analysis

All reflective pieces were de-identified and assigned a unique ID number by administrative staff. Data were analysed using a thematic analysis approach, as outlined by Braun and Clarke (Braun & Clarke, 2012). Analysis involved a number of interrelated steps including familiarisation with the data, reading and re-reading. Inductive coding of individual pieces was then performed. The second and third authors reviewed the first author's analysis, sampling the raw data to determine congruence between reported themes and to ensure no themes were missed. Themes, subthemes and codes were listed in a matrix with illustrative quotes from individual participants for each code. Later, codes were collapsed where it was apparent that there were similar themes or clustering of themes. Coding was performed until saturation was reached, which was after a total of 38 reflective pieces (19 medical and 19 pharmacy). The codes were grouped into subthemes and themes linked explicitly to the research question.

Researcher reflexivity

The insider position of the first author, as a clinician from a general internal medicine and clinical pharmacology background working in an interprofessional team environment, and as a university academic responsible for designing and implementing interprofessional education, afforded first-hand knowledge of the setting and the participants which was invaluable in interpreting the study findings. This intimate knowledge related to the curriculum, the culture within the medical program and clinical practice environments, and the relationship between teachers and practitioners in pharmacy and medicine. The other

authors had little familiarity with participants and the setting, and this enabled a balance of insider and outsider perspectives to inform the interpretations made in this study.

4.5 Results

Three main themes were identified relating to what medical and pharmacy students' views and experiences are with regard to learning with students from another professional group. These were 'learning with', which incorporates the emotional language used to describe the contact between groups, the levels of comfort and familiarity with the other group, as well as linkages drawn to contact between professions in other settings; 'learning from', which includes students' recognition of complementary skillsets and field of knowledge of the two professional groups; and 'learning about', which encompasses the expression of views about their own and other professions' role in the healthcare team, the notion of a professional hierarchy, and the power differences between them. Illustrative quotes are presented for each theme (Participant ID: M= medicine, P= pharmacy).

Learning with

Students reported that they were generally comfortable in learning with other professions and welcomed the opportunity to learn with a different professional group. They tended to frame the contact between professional groups in positive emotional language, including the adjectives interesting, enjoyable, enlightening, happy and valuable. One source of transient apprehension and discomfort for some students was the unfamiliarity of students from the other professional group. Some pharmacy students reported that contact with the other group made them more comfortable in challenging the traditional power relationship between them, but it is unclear if they would enact this in practice. Some students reported that learning with another professional group had enhanced their appreciation of how to communicate with the other professional group. Both medicine and pharmacy students could see the value in learning together with another profession before graduation because of the

need to work together later. Many students drew links between better patient outcomes and the team approach to clinical practice. *“They were very nice people who had similar [sic] chosen a similar path to us medical students and so had similar priorities and values” (M15).* *“I will be more proactive and less intimidated by the status of a doctor [physician]” (P36).* *“hope both professions could work more closely together than they currently are because I think it will result in better medical care” (P31).*

Learning from

Both pharmacy and medical students recognised the complementary nature of the knowledge base of the two groups. However, an interesting contradiction emerged as the students spoke about their level of knowledge and contributions. Pharmacy students tended to see their own knowledge deficits as barriers to engagement and collaboration with another profession, while medical students viewed their knowledge deficits as an area for improvement rather than an impediment to collaboration. Students described plans to increase their own knowledge by studying resources such as past lectures, books, online tools and modules. Medical students in particular flagged an intention to utilise ward pharmacists as a resource in the clinical setting to bridge gaps in knowledge for patient care, but it was not clear how they would go about this activity. *“Any time that there is a pharmacist attached to the team I am on, I will ask lots of questions about drugs that I don’t understand, and medication regimes for different diseases.to broaden my knowledge” (M3).*

Another contradiction also emerged in how medical and pharmacy students thought about each other’s knowledge. While some medical students perceived pharmacy students as highly knowledgeable, with greater knowledge and depth of understanding on specific areas (particularly basic pharmacology), others made judgments about pharmacy students’ relative lack of clinical experience, inferior levels of knowledge, and inability to apply knowledge in clinical settings, which they felt prevented interaction as equals. *“I felt that the pharmacy*

students were lacking in knowledge in key aspects that prevented them from making equal contributions compared to myself and my medical student partner. Even when I outright prompted the pharmacy students for their thoughts, too often they struggled to make a substantial comment” (M10).

In contrast, pharmacy students were less likely to talk about medical student knowledge deficits, but some did note that medicine students’ relative lack of detailed medication knowledge was not befitting the prescribing role of a physician. *“It makes you realise how little doctors [physicians] know about medicines and their specifics. It’s not their fault as it’s not really in their curriculum, but it’s scary when you consider they’re allowed to prescribe and we’re not” (P31).*

Learning about

The physician as leader was a common theme. Medical students saw themselves as leading the engagement between professional groups and parallels were drawn with the professional hierarchies observed in their clinical experience. There was a perceived need to prompt and push the other professional group reflecting a sense of arrogance and superiority. Medical students articulated the physician’s role within the healthcare team as that of coordinator, gatekeeper and final arbiter, determining which other professionals should be involved and how.

The role of pharmacist was clearly articulated as a medication expert, but there was a clear sense this was a subordinate role to that of the physician, reflecting in the use of words such as ‘support’, ‘assist’, ‘aid’, ‘advise’ and ‘suggest’. Students perceived the pharmacists’ main role was to act as a safety net for physicians as in terms of providing a second check in the prescribing process. This safety net role was most clearly articulated by pharmacy students. Students expressed how a pharmacist could add to patient care through their role in implementing a physician’s plan, mostly by advising patients on optimal use of medicines.

“As a pharmacist, realistically, we are to double check that what the doctor [physician] has prescribed and avoid potential errors. Unrealistically, we would take part in the prescribing decision to help decide the best pharmacological treatment, if needed, for the patient.” (P26).

The concept of the pharmacist (and allied health professionals more generally) providing a different and complementary perspective on the patient’s care was expressed, although this was not always seen as a positive attribute and some medical students were dismissive of the different approach. *“They have a very different perspective on patient care. In addition, the ‘pharmacist’ seemed to want to limit the number of medications to minimize side effects rather than add medications to treat all the conditions which was interesting. This seemed to demonstrate a theoretical understanding rather than adapting to a real-life situation where multiple disease processes and prioritization is required” (M9).* Integration of pharmacy students’ input into therapeutic regimes and medication choices was seen to be at the discretion of the physician, that is, able to be dismissed or ignored. *“You should ask for the pharmacist/other allied health where appropriate of their specific options and try and endorse that where possible. However, you have to make the final decision on what is most appropriate for the patient” (M14).*

4.6 Discussion

Undergraduate pharmacy and medical students were largely positive about learning with and about another profession. Students could see benefits to patients and benefits to their future practice in learning about their professional roles and those of their colleagues. However, students did not appear to value this and invested little effort in co-constructing understandings and creating shared knowledge. Medical students demonstrated a marked propensity toward assuming the role of leader and saw this as part of both their scope as learner and group participant, as well as part of their professional role. Pharmacy students

overwhelmingly adopted a subordinate role, providing information support and viewed their professional role as advisory, providing verification rather than active co-contribution.

The traditional relationship of physician as the dominant professional appeared in reflections of both groups of students. The concept of the pharmacist making important contributions to patient care by fulfilling a safety check role was recognised by both groups, but perhaps more emphatically by the pharmacy students. Nevertheless, there was an undertone that questioning a physician's authority is difficult for a pharmacist. There was some questioning of the power imbalance, particularly in relation to prescribing where the superiority of physicians was seen as inappropriate when medicine students' detailed knowledge is seen as inadequate for the task. This is seen as a mismatch of capabilities and responsibilities since pharmacists do not have the right to prescribe, yet their knowledge of medications is better than that of medical practitioners. Although understandable, this attitude is somewhat incongruent with the poor uptake of increased responsibility that has been available to pharmacists in recent years, including limited prescribing rights (Chan et al., 2008; Roberts et al., 2005; Rosenthal et al., 2010). Nevertheless, the prescribing role is a major component of the power gradient between the professions, with the medical prescriber perceived as having the greater responsibility and the pharmacist role as supporting the prescriber.

Knowledge appears highly valued by these undergraduate students and used as a measure of professional worth. This is evident in the medical students' reflections which praised the pharmacy students as 'medication experts', but also made derogatory comments about pharmacy students' lack of knowledge. Pharmacy students themselves also cited inadequate knowledge as a reason for their lack of confidence to contribute meaningfully to learning with, about and from other professional groups. When medical students mentioned learning from another professional group, this was described in terms akin to a 'taking of

knowledge'. They expressed the intention to utilise (as distinct from working collaboratively with) pharmacists to bridge gaps in their knowledge. Overall, this study lends support to the notion that knowledge is seen and treated as a commodity by undergraduate health professions students as something to be taken or utilised, rather than something to be jointly developed.

Overall, this study illustrates that there are a number of issues associated with undergraduate students learning 'with, from and about' each other. These seem to reflect traditional power differences and professional hierarchies between the professions and can impede meaningful interprofessional learning. Whilst contact between professional groups can provide a platform for deeper learning, this is more likely to happen if students experience challenges to their assumptions about other professions and their beliefs about the value around interprofessional interaction (Mezirow, 1997). Learning from others can only occur if participants are open and willing to new perspectives (Hovey & Craig, 2011). It requires the learners to co-construct and share new meanings, which does not occur in this study. Some authors have suggested that interprofessional practice requires greater development of the self and may therefore be a longer-term proposition beyond licensure (Ward et al., 2017).

This lack of 'learning from' does not fit with how educators tend to conceptualise interprofessional education. However, from a practical perspective it illustrates the complexity of ensuring the desired outcomes when students from different professions are put together (Kuper & Whitehead, 2012). Learning with others has enabled both groups to learn something about the other profession and they perceive this as worthwhile. Perhaps two out of three is sufficient since learning with and (a little) about is enough to enable professionals to work together. The literature may be wrong about how interprofessional education is conceptualised. D'Amour and colleagues have stated that in order to collaborate

one must be familiar with the other professions' roles, responsibilities and conceptual models (D'Amour & Oandasan, 2005). Whilst the end goal of collaborative practice is certainly valid, achieving the requisite familiarity with another professional group could be seen as a necessary first stage (Charles, Bainbridge & Gilbert, 2010).

This study provides in depth insight into how undergraduate health professions students perceive learning with students from another health profession. However, there are limitations to this study, including that it relies on self-reported data from students within one academic institution in Australia obtained at only one time and also social desirability response bias (Fisher, 2000). While the insider position of the first author intimately shaped the research approach and interpretations, the co-authors who were outsiders provided a useful counterbalance in interpreting the findings.

4.7 Conclusion

Learning from another professional group requires greater openness to co-construct and share new meanings and was not achieved in this interprofessional education setting. Learning with another professional group is seen as positive by learners and enables an understanding of roles and responsibilities in patient care. Some learning about another profession occurs in interprofessional education and this small shift in attitudes will likely have benefits for future practice. It may provide the foundations for building collaborative practice at a later stage. However, it is unlikely this will be sufficient on its own to result in the significant advancement of a more collaborative model of practice in the context of wider influences and set patterns of professional roles and relationships. To provide learners with the understandings that can form the basis for collaborative practice, their fundamental assumptions, beliefs and values around other professions and interprofessional interaction need to be challenged.

Chapter 5. How Pharmacy and Medicine Students Experience the Power Differential Between Professions

5.1 Statement of Author Contributions

Title of Paper	How pharmacy and medicine students experience the power differential between professions.
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Publication Details	Submitted to the Journal for Interprofessional Care 3 rd March 2019, revised manuscript submitted December 2019

Name of Principal Author (Candidate)	Josephine S. Thomas		
Contribution to the Paper	Performed literature review for the paper. Designed the study (including design of interview questions, recruitment) performed data analysis, wrote the manuscript, acted as corresponding author, and revised manuscript in response to comments from supervisors and reviewers.		
Overall percentage (%)	90		
Certification:	This paper reports on original research I conducted during the period of my Higher Degree by Research candidature and is not subject to any obligations or contractual agreements with a third party that would constrain its inclusion in this thesis. I am the primary author of this paper.		
Signature		Date	24 August 2020

Name of Co-Author	Koshila Kumar		
Contribution to the Paper	Supervised development of the study. Reviewed and assisted with manuscript revision and editing.		
Signature		Date	24/08/2020

Name of Co-Author	Anna Chur-Hansen		
Contribution to the Paper	Supervised development of the study. Performed independent analysis of the data as a measure of rigour. Reviewed and assisted with manuscript revision and editing.		
Signature		Date	24.8.20

5.2 Abstract

Common barriers to collaborative practice include negative attitudes, professional stereotypes, professional cultures and power differentials between professional groups. Interprofessional education is one approach to improving communication and collaborative practice between professions which are essential for the optimal delivery of healthcare. Despite the demonstrated positive impact of interprofessional education, it is not clear how professional hierarchies and power differentials between professions influence students' learning with, from and about other professional groups. The aim of this study was to explore how professional hierarchies and power differentials shape interprofessional interactions between pharmacy and medicine students. Participants were Year 4 pharmacy and Year 5 medicine students from two Australian universities. Data were gathered via in depth interviews and were analysed for themes. Four main themes were identified by inductive coding. These were: doctor as leader, disrespectful behaviour, differing clinical care values and goals, and challenging the traditional relationship. Evidence of the hierarchy between the professions was identified by the pharmacy students in the behaviour and attitudes of medical students. The view of the other profession was unflattering and largely reflects traditional stereotypes for each group. However, students perceived that interprofessional learning can help them improve future practice and report they intend to practice collaboratively. They were aware of the potential negative impact of traditional roles and stated that they seek to overcome this. Both medicine and pharmacy students' valued learning about the other profession, however, stereotypes predominate. Emerging professional identity and conceptualisation of future roles appears heavily influenced by a hierarchical relationship and poses a significant barrier to collaborative practice. Students appeared prepared to challenge traditional roles and power differentials and should be supported to do so. Cultural shift may be slow and institutional support for collaborative interprofessional practice is needed at the

level of policy and accreditation in health education and healthcare to ensure greater commitment to change.

5.3 Introduction

Collaborative practice between professional groups is vital for the delivery of safe high-quality healthcare. Common barriers to collaborative practice include negative attitudes, professional stereotypes, professional cultures and power differentials between professional groups. (Baker et al., 2011; Varpio, Hall, Lingard, & Schryer, 2008). Clinicians increasingly work with multimorbid patients with polypharmacy and a high likelihood of drug interactions with potential for harm (Barton et al., 2012; Roughead et al., 2013). In this context, a collaborative working relationship between doctors and pharmacists may facilitate optimal use of the expertise of both professions and ensure better patient outcomes. The involvement of both pharmacist and medical practitioner in the prescribing process has the potential to increase patient safety through an additional layer of cross-checking (Gallagher & Gallagher, 2012; Routledge, 2012). However, most pharmacists are reluctant to question a medical practitioner's authority and will rarely offer an opinion about prescribing unless prompted (Rosenthal et al., 2010). The tendency for pharmacists' perspectives to be unheard by doctors may be due, at least in part, to the traditional unequal power relationship between the professions which can impede interprofessional communication (Baker et al., 2011; Frankel & Austin, 2013).

Historically, medical dominance of other health professions such as nursing and allied health has been a societal norm afforded by perceptions of doctors as saving and prolonging lives (Austin et al., 2007; Barrow et al., 2011). Medical dominance of other professions has been defined as "the power of doctors to control others through a cultural authority based upon the value accorded to their medical knowledge" (Weiss & Sutton, 2009, p. 407). This authority is upheld by legal sanctions and demarcations, such as the legislative requirements

of prescribing where the doctor holds the ultimate power of medication choice (Pharmaceutical Benefits Scheme, 2019; Willis, 2014). Leadership is an integral part of a doctor's professional identity (Baker et al., 2011). The emphasis on leadership as part of medical identity likely has its roots in the patriarchal doctor-patient relationship model (Emanuel, 1992) and the evolution of medicine as a profession by exclusionary strategies (Witz, 1992). The legal responsibility for patient care also supports the status and roles afforded doctors (Baker et al., 2011).

There have been multiple challenges to this medical dominance over recent years, including the changing roles of other health professionals and the growth in consumerism and litigiousness (Johnson, 2016; Willis, 2014). Despite a predicted diminution in status as a result of these challenges, medicine retains considerable institutional power and social legitimacy (Timmermans & Oh, 2010). There have been significant changes in the role of pharmacists in recent decades with an increased emphasis on patient-care roles (Elvey et al., 2013; Gallagher & Gallagher, 2012; Roberts et al., 2005). However, the legal framework for prescribing and patient care in Australia still upholds medical authority and there has been fierce medical opposition to non-medical prescribing (Australian Medical Association, 2012; Australian Medical Association, 2014). Models for pharmacists prescribing in limited settings have been developed and further debate about the merits of autonomous prescribing continues (Pharmacy Board of Australia, 2019a).

Interprofessional education is often employed as a way to promote collaborative behaviours in students, with the hope this will translate into future practice (Reeves et al., 2016a; Reeves et al., 2008). There is evidence that interprofessional education has positive impacts on attitudes, knowledge, skills and behaviours (Reeves et al., 2016a). However, formal interprofessional education occurs in the context of contact with other professions in the clinical environment and more broadly, in society (Hafferty & Castellani, 2009; Mossop,

Dennick, Hammond & Robbe, 2013; Poore et al., 2014), which also impacts on students' attitudes and behaviour. Interprofessional education alone is unlikely to be sufficient to create collaborative practitioners in the context of embedded hierarchies within the interprofessional healthcare team (Kuper & Whitehead, 2012). Significant insights into the power relationships between different health and social care professions, clearly articulated in sociological literature, demonstrates that medicine is a privileged professional group, exercising patriarchal control over subordinate groups (Johnson, 2016; Turner & Samson, 1995).

The power differential between professions is an important consideration in planning and evaluating interprofessional education. The theoretical frameworks which underpin interprofessional education suggest optimal conditions for contact between different groups to reduce prejudice and include equal status (Allport, 1954; Pettigrew et al., 2011; Tausch & Hewstone, 2010). In some cases, interprofessional education has reinforced conventional hierarchies (Baker et al., 2011). There are relatively few studies, which directly address the issue of power relationships in interprofessional education. An analysis of published interprofessional education research spanning several decades identified only six articles which addressed power and conflict (Paradis & Whitehead, 2015). In interprofessional education research, where the issue of power is explicitly addressed, the doctor is consistently articulated as the dominant professional (Paradis et al., 2017). An earlier study by the authors showed that medicine and pharmacy students valued learning with and about each other but were less likely to engage in co-constructing and sharing new meanings and thus learn from one another. Findings also reflected traditional power differences and professional hierarchies between the professions with the medical prescriber perceived as having the greater responsibility and the pharmacist role as supporting the prescriber (Thomas, Kumar, & Chur-Hansen, 2018).

The aim of this study was to explore how professional hierarchies and power differentials shape interprofessional interactions between pharmacy and medicine students. We posed the research question: How do traditional professional hierarchies and differentials influence what undergraduate medicine and pharmacy students learn with, from, and about each other?

5.4 Methods

Methodology/research design

A qualitative study was designed to explore students' experience of the power differential between the professions through semi-structured interviews.

Participants

Participants in this study were undergraduate pharmacy and medical students from two universities in Australia. The medical student cohort comprised of 198 students who completed Year 4 of a 6-year program the previous year and the pharmacy cohort comprised 114 students who completed Year 3 of a 4-year program the previous year. Both groups commenced clinical (workplace) placements in the year prior to this study, including participation in a series of interprofessional workshops.

Data collection

Students were invited by their university student email to participate in a semi-structured interview about how and what they learned in interacting with another professional group in the context of the interprofessional workshops and more broadly, in their clinical placements. Participation in the research was voluntary and there was no impact on grades. 9 medicine and 7 pharmacy students agreed to participate. All interviews were audiotaped, transcribed and assigned a unique identification number by administrative staff. Interviews were conducted by two personnel who were not involved with teaching or assessment of the participants. Both interviewers used the same prompt questions and met with researchers to

discuss alignment of interviews with the research focus. The interviewers did not participate in the design or analysis of the study.

Data analysis

Data were analysed using a thematic analysis approach, as outlined by Braun and Clarke (Braun & Clarke, 2012; Braun & Clarke, 2013). Analysis involved a number of interrelated steps including familiarisation with the data, reading and re-reading the transcripts. Inductive coding of individual transcripts was then performed. The second and third authors reviewed the first author's analysis, sampling the raw data to determine congruence between reported themes and ensure no themes were missed. Themes, subthemes and codes were listed in a matrix with illustrative quotes from individual participants for each code. Later, codes were collapsed where it was apparent that there were similar themes or clustering of themes. The codes were grouped into subthemes and themes linked explicitly to the research questions.

Ethical considerations

Ethics approval was granted by the relevant institutional Ethics Committees (16/19, OH-00087).

5.5 Results

Four main themes were identified relating to how traditional professional hierarchies and differentials influenced what undergraduate medicine and pharmacy students learn with, from, and about each other. These themes included: doctor as leader, disrespectful behaviour, differing clinical care values and goals, and challenging the traditional relationship.

Illustrative quotes are presented for each theme (Participant ID: M= medicine, P= pharmacy).

Doctor as leader

This theme incorporates students' perception of the power differential between medicine and pharmacy professions and how they are socialised to the identities that underpin this relationship. This includes subthemes of the subordinate role of pharmacists with the doctor as leader of the interprofessional team and the impact of this on their communication styles. Pharmacy students viewed themselves as being in a subordinate role. Some identified that this role was reinforced and perpetuated in the teaching and training they received at university. *"I guess we have it drilled into us that the doctor is the font of all knowledge and we should defer to them on any matters we are not sure of and when we started talking drugs they were not as clued in as we were ... we have that subordinate role drilled into us where it's just suggest [to the doctor] 'maybe you would like to do this, what do you think?'" (P7).*

This subordinate identity was seen to influence how they communicate with doctors and doctors in training. This was expressed as presenting information to doctors as a suggestion for consideration, rather than a discussion between equals. Pharmacy students expressed a lack of receptiveness to their input despite their medication expertise, from medical students and doctors generally. *"The pharmacist has the responsibility to call and inform the doctor but sometimes it is really hard for the doctor to accept" (P6).*

This power differential was also experienced in clinical settings and thought to be reinforced by the societal view of the superior status of doctors and medical students. This was echoed in the subtheme of the perceived superior value of clinically oriented skills and activities, such as diagnosis which is more prominent in the medical role. *"From my personal interaction I believe that to be true and even I think for being a sort of awareness that doctors are held to higher regard than pharmacists even though we both have different strengths and different knowledge bases" (P2).*

In contrast, medical students denied the existence of a power differential but their own accounts and views of the role of doctors as leaders of the healthcare team contradicted this. They perceived that doctors had ultimate responsibility for decisions on care and that their role was to act as arbiters of the different viewpoints of other professions. However, some medical students acknowledged that the doctor could potentially disregard sound advice and that this could negatively impact on patient outcomes. *“And so, even if the pharmacist knows better, the doctor’s decision goes, and the patient may potentially have a worse outcome” (M2).*

Both groups valued expertise and knowledge. Medical students perceived that individuals with expert knowledge were worthy of respect, although this mostly applied within the profession and was usually equated with position in the medical hierarchy, for example, the consultant (head of the specialist hospital medical team). However, in some instances the same admiration and respect was applied to pharmacists but more as an exception than the norm. *“There was a pharmacist there who just knew SO much about all the different medications and inhalers and stuff, I think everyone just went to him and just saw him as like a big guru” (M5).*

For pharmacy students, the respect for medication expertise was the main focus of a positive relationship between the professions and appeared affirming for their confidence and sense of professional identity. *“And you sort of reconfirmed your position as a pharmacist, for me anyway, just like they really do look to us for that clarity and that knowledge on anything related to medicines” (P2).*

Disrespectful behaviour

This theme incorporates students' perception of the other profession's attitudes and professional behaviour which appeared to influence their own attitudes toward and level of engagement with the other group. Pharmacy students perceived medical students as careless and overconfident in the prescribing role and viewed their behaviour as disrespectful toward pharmacy. Medical students saw pharmacy students as lacking assertiveness and communication skills, requiring prompting for their input.

Pharmacy students viewed that the medical students were overconfident and willing to make medication choices, despite an obvious lack of underpinning pharmacotherapeutics knowledge and rationale. They felt medical students should receive more training in medication choices. *“Ok, let's just pick this statin' and the pharmacy students were like 'why did you pick that one?' and then we realized they didn't know the difference between like the potencies of the statins and that sort of thing I know they were fourth years so they hadn't learnt everything, but they would just pick a drug that they were familiar with” (P3).*

Pharmacy students perceived a lack of respect from some of the medical students. *“There was just a bit more sort of talking over the top and we would give out a recommendation and they would sort of ignore it and then when we got the answers for the case the pharmacy students were right anyway..... I have had to speak to doctors in the real world and that has happened before as well, so it wasn't completely surprising” (P2).*

Some indicated that they expected a negative attitude from medical students and were not surprised that their opinions were not listened to, citing clinical experience with medical professionals. *“When I talked with the pharmacy students who were in different groups of medical students, they got the impression that their opinions didn't matter” (P5).*

Disrespectful behaviour toward pharmacy students and the pharmacy profession generally was denied by medical students, with responsibility and leadership considered as part of the role. *“I think that position of responsibility and leadership, right or wrong and this model or another, often falls to the doctor just based on long standing societal roles”* (M4).

Medical students did, however, recognise that some disciplines within their profession may be more likely to act in a superior way, with surgeons cited as the typical example of this attitude. However, in other disciplines with arguably more functional interprofessional teams (for example, geriatric medicine and rehabilitation), doctors were still perceived as the team leaders with ultimate decision-making ability. *“Like I don’t think any of us had the attitude of surgeons or anything just yet, like there is always a couple who think highly of [themselves]”* (M6).

Medical students were critical of the pharmacy students’ inability to assert their opinions and perceived the pharmacy students as timid and unskilled in communication. This seemed to provide medical students with a rationale for forging ahead and taking leadership in the decision making. *“But then I also noticed that same [pharmacy]student was really reluctant to make a choice, sometimes it felt like in cases like that OK it felt a bit obvious what was the choice, but they were like ‘Oh no, at the end of the day you guys will have to make the decision’. I don’t know, I thought like they knew a lot more but then there were reluctant to like they could have taken the lead, I felt”* (M3).

Differing clinical care values and goals

This theme refers to the students’ developing awareness of differing clinical values and goals. It encompasses the students’ view of the other profession and the perceived differences in skills, knowledge and professional roles. Both groups identified the other as possessing specific expertise and focus but saw these as somewhat opposed. The main focus

of the pharmacist was viewed as promoting medication safety, avoiding interactions and adverse effects. In contrast, the main focus of the doctor was perceived to be diagnosis and the treatment of symptoms and disease. These distinctly different approaches to patient care were seen to be in conflict at times, with the doctor looking to prescribe medicines for all issues identified and the pharmacist seeking to reduce or cease medications.

The expertise provided by the pharmacy students included detailed medication knowledge, particularly about adverse effects and drug interactions and that was appreciated by both professional groups. *“If you picked a drug, they would know the science and they would understand it, I thought that was an acute strength” (M7).*

The pharmacy students were focussed on the minimisation of harm through avoiding potential medication adverse effects, dosing errors and interactions. *“We suggested a better drug, because obviously some interact” (P2).* Medical students were aware of the safety net pharmacists provide through ‘double checking’ the doctors’ prescriptions. *“They essentially checked and went around and checked all the med charts for incomplete prescriptions or errors” (M9).*

Medical students were seen by both professional groups to have a broad overview of the patient and in particular, to have skills in diagnosis that pharmacists do not have. *“And they do the majority of the diagnosing and actual investigation into what is making this person ill or what is wrong with them and they lead into what the patient needs or start investigating” (P2).* While medical students were aware of the safety role of a pharmacist, some saw the pharmacist’s focus on adverse effects as somewhat opposed to their goal of treating patients and as a hindrance to doctors doing their job. *“They always say to stop this because they have a headache because of this but they don’t have a headache because of that drug, they had a headache well before they started the drug.” (M7).*

Challenging the traditional relationship

This theme incorporates students' perceived agency to change the narrative and challenge the status quo. Students perceived the potential for a change in the relationship between pharmacy and medicine. Some students recognised that there was a diversity of attitudes within each profession and that some members may be more willing to listen and collaborate.

For pharmacy students, improving interprofessional relations was seen as a way to bridge the professional divide. *"What I see that doctors are the main pillar and we are like the cement, pharmacists are like the cement like to help the patient you know, the stronger the pillar, the stronger the building is going to be"* (P3). Some medical students recognised the behaviours that are part of the hierarchical relationship between the professions and reported the need to reflect and monitor their own behaviour. *"Being self-aware enough that you know, don't have a unique sense of invulnerability that "Oh I will never be disrespectful" or "I will never stop listening" (M9)*. Pharmacy students also acknowledged this diversity in attitudes among medical students, reflecting a sense of hope that future medical professionals may be willing to take a different approach. *"[There are] definitely medical students and future doctors out there who are really positive and really willing to take on a different outlook"* (P2).

Both groups perceived that interprofessional contact will help to prepare them for future collaborative practice. Gaining a better understanding of other professions' roles through formal interprofessional education sessions was seen as helpful for improving interprofessional interactions and attitudes toward other professions. However, there was recognition that interprofessional interaction in undergraduate learning is a limited part of the formal curriculum and more of an incidental occurrence in clinical rotations. *"I think it was just like a lack of understanding on their part of the knowledge that we actually have these*

[interprofessional education] sessions do help try and build that sense of relationship with the other healthcare professionals which is good” (P3).

5.6 Discussion

This study showed that the traditional professional roles and the power differential between professions are a strong influence on how pre-licensure medical and pharmacy students interact and learn with, from and about each other. Their perception of the roles within a healthcare team was dominated by the power differential of the professional hierarchy. The emerging professional identity of both groups appeared to be strongly influenced by traditional stereotypes and socialisation in both educational and clinical settings. However, both groups recognised the potential negative impact of a hierarchical relationship between professions. This study also adds to the possibility that the cultural shift is occurring in these professions, as some students seemed prepared to challenge traditional roles and power differentials.

Although the existence of a power gradient was explicitly denied by medical students, it was paradoxically apparent in their language and attitudes. They described themselves as ‘leaders’ and assumed that role, even if they did not have the necessary medication knowledge or prescribing skills for the situation. This type of behaviour has been observed in other studies where health professions students take on responsibility of patient management even when they do not have the necessary knowledge to provide appropriate advice. Particularly in medicine, students and doctors seem compelled to work things out themselves and to take charge despite gaps in experience and knowledge (Aper et al., 2015; Fernandes et al., 2008). The role of doctor as leader has limitations in the context of the interprofessional team. It is well recognised that power gradients can facilitate an unsafe healthcare environment, and this applies both within and across professions (Reason, 2000). A distributed leadership model where leadership is an action taken by the person with the best

available skillset at that time, is more likely to be a successful model for utilisation of the available expertise of all team members (Gronn, 2000). It is unclear if medical students perceive their own leadership in this way and there would be further benefits for future research to address student perceptions of models of leadership in an interprofessional team.

The medical students' attitude of superiority toward the pharmacy students seen in this study is something that is well described in literature (Helmich et al., 2010; Weaver et al., 2011). This has been recognised as a likely effect of strong cohesion and identification with their professional group (Abrams & Hogg, 2010). Although strong 'in-group' identification has a positive impact on professional identity development, there are negative outcomes of this strong identification, including a lack of collaborative behaviours and prejudice (Pettigrew et al., 2011). Although medical students recognise the need for teamwork skills, they commonly demonstrate an exclusive attitude to learning with other health professions students (Weaver et al., 2011). In this study, the medical students did not explicitly see a power differential within their own interactions. However, they did refer to some disciplines (notably surgery) as being prone to behaving in a superior manner and some expressed the intention to avoid adopting these values and behaviours. This signals potential for a cultural shift in the interprofessional relationship between pharmacy and medicine.

Professional hierarchy was evident to the pharmacy students and they commented on this explicitly and with some resignation. The notion of professional hierarchy appears connected to the societal view of the professions and the perceived importance of the clinical role of a doctor afforded by societal perceptions of physicians as saving and prolonging lives (Austin et al., 2007; Barrow et al., 2011). The identification with these aspects of professional identity is likely deeply held, beginning prior to entry to study for many. Influences may include family for some students, in particular medical students who have traditionally been likely to have a family member within the profession (Cavenagh et al., 2000). The intention

of educators is to promote collaborative behaviours by bringing two professional groups together in the setting of interprofessional learning (Reeves, 2016). However, the emerging professional identities of these two groups do not have them starting out on an equal footing. This inequality carries a risk of interprofessional contact between medicine and pharmacy, reinforcing stereotypes and maintaining the dominance of medicine, rather than the intended outcome of promoting collaborative behaviour (Pettigrew et al., 2011).

A predominant aspect of practicing pharmacists' identity is related to the emphasis on scientific knowledge and calculation in their training, with these seen as desirable attributes, particularly in their interaction with doctors (Elvey et al., 2013). The nature of pharmacy practice is careful and exacting work - they use algorithms and follow rules and validated systems and tend to be risk averse (Rosenthal et al., 2010). This may account for their expressed view of medical students as careless by comparison. For the pharmacy students in this study, the detailed medication knowledge they possess is a source of strength and they see this can be used in their interaction with medical students and doctors. The inherent value of their knowledge is used as a way to garner respect and gain the doctors' attention in professional interactions. In this way the pharmacy students aim to overcome the communication difficulties that arise from the power differential.

Doctors also value knowledge highly (Fischer & Muller-Weeks, 2012; McColl, Bilszta, & Harrap, 2012). In a previous study of this cohort, medical students saw knowledge more as a commodity and viewed the knowledge other professionals possess as something they wish to use or acquire. (Thomas et al., 2018). In this study, medical students tended to equate knowledge with power and position in the hierarchy and believed that individuals with superior knowledge should command respect. However, they were still willing to make therapeutic decisions without adequate knowledge, which appears to be somewhat

contradictory. It appears that their assumption of the superior role overrides this knowledge deficit, despite the inherent danger to patients.

Students demonstrated awareness of how the power differential and professional stereotypes can negatively influence collaborative practice. Some expressed an intention to address these issues in pursuit of more collaborative professional working relationships in the future. Pharmacy students perceived that interprofessional learning can help them in future practice to bridge the professional divide through greater understanding of each other's roles and enhancing their skills in interprofessional communication. Some expressed a hope that a greater understanding of pharmacy roles and skills might result in a change in medical professional attitudes. Cultural shift is always slow, and many external factors will continue to influence this change. Some authors have expressed the view that challenge of the embedded hierarchies is necessary to promote collaborative interprofessional practice alongside other measures such as interprofessional education (Kuper & Whitehead, 2012; Timmermans & Oh, 2010).

Nevertheless, interprofessional education may be a conduit for developing positive collaborative relationships in practice. However, this requires educators to move beyond a focus on content in order to reveal the established ways of thinking and seeing and doing that can influence interprofessional interactions to help students to negotiate and manage these. Curricular strategies can be implemented to help students in recognising the impact of professional hierarchy on their behaviour. Methods that may be useful in this regard include expert facilitators engaging students in discourse about professional identity, power, hierarchy and setting the tone around respectful behaviours and ways of interacting. Debrief may be an effective model to improve self-awareness about interactions since it is designed to build on experiential learning and can encompass affective components of learning (Cant & Cooper, 2011; Fanning & Gaba, 2007).

Institutional support for more collaborative practice has been provided at several levels across education, training and the healthcare workforce and continues to provide support for change (Frenk et al., 2010; Gilbert, Yan, & Hoffman, 2010; Thomas, Gilbert, & Thompson, 2017). However, students will continue to experience role modelling that perpetuates professional stereotypes. Furthermore, an equal footing between pharmacists and doctors is unlikely whilst the current legal sanctions of medical dominance remain, particularly in the area of prescribing. Greater commitment to change is needed. This may be achieved through policy and accreditation requirements in health education and healthcare that address the power balance between professions and promote collaborative practice. Common interprofessional competencies should be an expected outcome at completion of study across health professions. This would ensure that they feature more prominently in learning and assessment of students. Models of best practice interprofessional healthcare could be similarly promoted through standards of accreditation and continuing professional development for qualified health professionals. The debate in favour of pharmacist prescribing continues to gain support (Pharmacy Board of Australia, 2019a). Ongoing reform of the prescribing process should be considered to enable greater use of pharmacist expertise in medication safety.

Chapter 6. Concluding Discussion

6.1 Introduction

This thesis provides a critical analysis of interprofessional learning between pharmacy and medicine students. It explores how pre-licensure pharmacy and medicine students perceive and experience interprofessional learning with a specific focus on how elements beyond the formal curriculum such as traditional power differentials between medicine and pharmacy professions can impact learning. This research has used the widely accepted definition of how interprofessional learning occurs: “students from two or more professions learn about, from and with each other to enable effective collaboration” (World Health Organization, 2010, p.7). The development of professional identity as it pertains to and is impacted by interprofessional interactions is explored. It critically reflects on some of the challenges in the field of HPE research and how these may be addressed.

Adult Learning Theory (Knowles, 1984) has been an important framework in this research to facilitate an understanding of the needs of students in the interprofessional education context. In examining the design of interprofessional education sessions, Adult Learning Theory has been used to highlight the components that contribute to a meaningful experience. Transformative Learning Theory (Mezirow, 1991), including the need for reflection, has been used to examine the learning of students in the research context and my own learning during the PhD journey. It has facilitated an understanding of the need to challenge student beliefs, values and assumptions around learning and collaborating with another profession. For my own learning, Transformative Learning Theory has been used to examine the role of reflection in major paradigm shift to qualitative researcher.

Intergroup Contact Theory (Pettigrew, 1998) has been used as a lens through which to interpret interactions between pharmacy and medicine students and to explain the reinforcement of stereotypes that occurred with interprofessional contact between the two

groups as well as some of the positive outcomes. Intergroup Contact Theory also assists in interpreting the identification with professional roles and groups that contribute to the formation of professional identity for these students. The overarching impact of the longstanding traditional hierarchy and power relationship between the medicine and pharmacy professions on interprofessional learning has been critically examined through the lens of the sociology of the professions (Macdonald & Ritzer, 2016). This theoretical framework allowed an appreciation of both the current and historical contexts for the relationship between the professions and how this influences the interaction between medicine and pharmacy at multiple levels (Adams, 2013).

This chapter reflects on the thesis as a whole, including the research approach, overall significance of the work and contribution to knowledge, problems encountered, and directions for further research. This thesis has explored the phenomenon of interprofessional learning between pre-licensure pharmacy and medicine students and presents the findings of this research in Chapters 4 and 5. Critical reflections on the methodology used and the process of the research are presented in Chapters 1 and 3.

6.2 Summary of Findings

The reflections presented in this chapter relate both to the process of conducting the research and the phenomenon of interprofessional learning between pre-licensure pharmacy and medicine students. Chapter 1 detailed the background, rationale and methods. Chapter 2 outlined the reflexive stance taken in this qualitative research project and my personal journey as clinician-educator and the inevitable dissonance and the resultant transformative learning during my candidature. Strategies for managing the dissonance are presented, including appropriate supervision, connection with others through literature and sharing experiences. The value and need for reflexivity more broadly, as part of clinical practice and both quantitative and qualitative research, is argued.

Chapter 3 presented a critical reflection on poor student participation in educational research, prompted by the academic disruption resulting from challenges in collecting quantitative data for this project. It outlined the motivations and disincentives to student participation, drawing on insights from volunteering to determine useful strategies. Clear communication about purpose and process to potential participants and drawing on local knowledge to enable effective recruitment were recommended as key strategies. It also examined the ethical issues facing teacher-researchers and suggested how we might navigate these whilst encouraging participation. Explicit adherence to ethical principles with transparency for students is advised. Poor research literacy among students is argued as a contributor to low rates of participation which educators can address by embedding education research training in curricula.

Chapters 4 and 5 detailed the qualitative research findings which centred around how medicine and pharmacy students experienced interprofessional learning together. Chapter 4 utilised the definition of interprofessional learning as a framework and demonstrated that medicine and pharmacy students valued learning with and about each other but were less likely to engage in co-constructing and sharing new meanings and thus learn from one another. Students tended to view and treat knowledge as a commodity to be acquired from another rather than something that could be jointly developed. The subordinate role taken by pharmacy students and the assumption of a leader role by medical students were also demonstrated.

Chapter 5 reported more explicitly on the impact of professional hierarchy and power differentials on the interprofessional learning between medicine and pharmacy students. The students' view of the other profession was unflattering and largely reflects traditional stereotypes for each group. Emerging professional identity and conceptualisation of future roles appears heavily influenced by a hierarchical relationship between professions and a

traditional view of the doctor as leader of the interprofessional team which poses a significant barrier to collaborative practice. Some students were unaware of the power gradient between the professions despite the impact on interprofessional interactions. Nevertheless, students appeared prepared to challenge traditional roles and power differentials and seemed to recognise the benefit for patient outcomes.

6.3 Significance of Findings and Contribution to the Field

This research contributes a more nuanced view of how interprofessional learning between pre-licensure students is impacted by the relationship between the professions. It also questions the value of conducting interprofessional education in the absence of a systemic change in the wider context of interprofessional practice. This thesis has confirmed that the traditional hierarchical relationship between the professions of pharmacy and medicine impedes their learning together. Students demonstrated awareness of the value of multiple professional inputs to patient care. They recognised the negative impact of some stereotypic professional behaviours in reducing the ability of other professions to provide input to patient care. Students also acknowledged the superior expertise of the other professional group in some areas of practice. However, this did not readily translate into collaborative attitudes and their language reflected ingrained traditional professional attitudes and stereotypes.

Medicine students sought to harness and exploit the expertise of the other group. Medical professional dominance was asserted in the words they used, and leadership was presented as an integral and largely unquestioned component of their emerging professional identity. Their concept of leadership appeared narrow and did not allow for collaborative models such as distributed or shared leadership (Gronn, 2000). Despite bemoaning the lack of regard for their expertise, pharmacy students largely failed to challenge the status quo of medical dominance. They wanted more respect and better channels of communication yet

seemed unable or unwilling to move from a subordinate and deferent position.

Interprofessional education helped both groups gain a mutual respect for the other's skillset through interprofessional contact and envisaged better patient care resulting from multiple inputs, yet they failed to establish the changes in attitude that would enable true collaboration. However, despite the persistence of traditional attitudes, students appeared prepared to challenge traditional roles and power differentials on some level. For example, students did not support overtly disrespectful models of medical dominance but recognised the positive impact of a wider professional involvement in patient care that they saw in some clinical settings and identified functional interprofessional models of care. This recognition of the benefits of interprofessional input to care may be an enabler in the context of a wider cultural shift toward more collaborative practice.

There are many well recognised challenges to providing effective interprofessional education and despite over a decade of institutional endorsement and support for interprofessional education, many barriers remain (Australian Medical Council, Australian Pharmacy Council, Australian Nursing and Midwifery Accreditation Council, & Council on Chiropractic Education Australasia, 2016; Dunston et al., 2019). The current pervasive model of health professions education is a uniprofessional one, with interprofessional education as a small proportion of curriculum (Dunston et al., 2013; Frenk et al., 2010). Although students positively embrace the opportunity to learn with others, interprofessional education alone may not be sufficient to improve collaborative attitudes and behaviour in the face of the hidden curriculum and wider influences on their developing professional identities. Changes to policy and accreditation requirements across health education and healthcare that address the power balance between professions and promote collaborative practice are needed. Such changes will require resources and organisational commitment, therefore evidence

demonstrating the need for a different approach is valuable as well as evidence to support the development of any interventions in both education and workplace domains.

The ability to collect evidence in health professions education is imperative but can be hampered by poor student participation. Interprofessional education in particular is resource intensive and difficult to timetable (Grace, 2015; Poore et al., 2014), thus supportive evidence of efficacy is particularly important. Participant recruitment is a major challenge and poor participation rates are a widespread problem in HPE research (Walsh, 2013). Although poor participation is acknowledged to lead to bias and a failure to demonstrate outcomes, there is a lack of information in health professions and wider educational research literature about why students decline to participate (Chen, 2011). In this thesis the motivation for volunteerism in other contexts and the recruitment of human participants in other types of research has provided a way to understand the complex issue of poor student participation in health professions education research. This has led to a critical analysis of how we expose health professions students to research, the ethics of educational research and how we might improve their understanding through teaching and collaboration in research.

Bringing together the known motivations and disincentives and looking to wider student involvement in the area has culminated in a suite of possible solutions that researchers in health professions can deploy. Student recruitment can be framed as a wicked problem, one which is difficult to solve using traditional linear approaches due to its inherently complex nature. A wicked problem benefits from a diversity of viewpoints to unpack the complex and multifactorial aspects in order to find appropriate solutions (Rittel & Webber, 1973). Cultivating a deeper understanding among students about the benefits of health professions education research is proffered as one strategy to improve participation. Student collaboration and co-creation with researchers may be another strategy to enhance understanding for both students and researchers. The ethical considerations for teacher-

researchers add another layer of complexity to recruitment and potential for conflict of interest. The potential for coercion must be balanced with any incentives offered to participate.

This thesis illustrates the value of reflexivity and a qualitative approach across multiple areas of health professions education, practice and research. In the qualitative research paradigm, reflection and reflexivity are seen as essential tools, necessary to promote a clear understanding of the researcher's perspective and address bias (Symon & Cassell, 2012). Although not an explicit requirement, reflexivity can be very useful in quantitative research, given that a researcher's experience, values and attitudes all influence what he or she chooses to select, ignore or emphasise (Calas & Smircich, 1999). In the quantitative paradigm, it is held that randomised controlled trials represent an absolute truth. However, in reality, numbers alone rarely tell a story and quantitative research relies on a narrative for context as well as interpretation. The value of reflexivity has been noted in clinical practice (Verdonk, 2015), although it seems more accepted in some disciplines than others (for example, psychology and psychiatry). The value of reflection in education for promotion of deeper learning is acknowledged. The end result of transformative learning is change and this may occur when we experience a challenge to our attitudes, values and beliefs (Mezirow, 1997). However, the need for reflection is paramount in this process (Cranton, 1996). Given the subtle nature of some ethical issues in educational research, particularly relating to the power imbalance between students and teacher-researchers, reflexivity may also be helpful in identifying and addressing these (Regan et al., 2012; Reid, Bruce, Allstaff & McLernon, 2006).

This research contributes an example of enriched practice through a shift from a quantitative to a qualitative research paradigm. In this thesis, disruption in the form of psychological dissonance has challenged my assumptions and through personal reflection led

to a change in attitudes about the different forms of research and the value of reflection across multiple paradigms. Disruption to a planned mixed methods study has resulted in meaningful learning about the underlying reasons for poor student participation in educational research. The disorienting dilemma of students from different professional groups interacting together in interprofessional workshops is a purposeful disruption created by an educator intended to facilitate learning. However, the disruption seen in this research relates to both the unintended impact of the power differential between professions on interprofessional learning and the challenge of this traditional hierarchy by students. This thesis demonstrates the value of reflexivity for personal growth and for learning from unanticipated challenges in research across both quantitative and qualitative research paradigms.

6.4 Implications of Findings

The findings in this thesis raise the question of whether interprofessional education can deliver a solution to the problem of poor collaboration and the lack of patient centredness in modern healthcare. A focus on interprofessional education without attention to the wider influences will fail to address the culture and power relationships that undermine interprofessional collaborative practice. Despite over two decades of research and writing in the health professions literature, interprofessional education has not created the desired change in health professional relationships and collaborative practice (Dunston et al., 2013; Frenk et al., 2010). There are likely to be several reasons why this is so. The optimal timing for interprofessional education has been an ongoing source of debate (Hudson et al., 2016). From the outcomes of research presented in this thesis, the case for earlier contact appears strengthened.

From the midpoint of their training (on entry to clinical placements) these students displayed firmly ingrained attitudes typical of their profession. The potential to change these

attitudes becomes harder once they are formed, thus earlier contact would be logical. However, noting that these attitudes often form prior to entry into study (van Huyssteen & Bheekie, 2015) makes the sufficiently early timing within education programs a seemingly impossible task. The case for increasing meaningful contact with other professions through more interprofessional education also seems to flow from the findings in this thesis. Students were keen to learn more about a variety of professions which may improve interprofessional communication across a wider range of professions. Other benefits of increased contact may include the formation of stronger interprofessional relationships with potential for deeper understanding and hopefully better outcomes. Continuation of interprofessional education beyond licensure in the workplace setting is another strategy to reinforce the requirement for collaborative practice and embed the notion of continuing professional development in this domain of practice. However, interprofessional education should not be seen as a panacea for the poor relationships between professions. This is particularly important to note as it appears unable to break through the boundaries created by the wider social and institutional structures (Kuper, & Whitehead, 2012; Whitehead, Kuper, & Webster, 2012).

Given that it can reinforce stereotypes and hierarchies, interprofessional education may even contribute to worse outcomes in student attitudes and behaviours (Baker et al., 2011; Pettigrew et al., 2011; Swanwick et al., 2019). At least on its own, interprofessional education does not appear to be sufficient to achieve the stated aim: “to enable effective collaboration and improve health outcomes” (World Health Organization, 2010, p.7). Furthermore, failure to provide readily visible interprofessional models of care, relegates interprofessional practice to the place of a theoretical construct. Students will continue to receive the hidden curriculum message that interprofessional collaboration is not a reality of healthcare practice. Role modelling of interprofessional collaboration and practice should be demonstrated both in the workplace and in the educational setting. This is important to make

visible how the theoretical construct of collaborative practice among the professions can translate meaningfully and into clinical practice. There is a need to provide continuity of interprofessional learning from the educational setting into the workplace. For this to be realised, the support for interprofessional learning and practice needs to be much greater at an institutional level across health services and universities. Current clinical (workplace) placements (both before and after licensure) are almost exclusively reliant on a uniprofessional model of supervision and assessment which reinforces the notion of professional exclusivity and the belief that only the profession's members can supervise its own trainees (Australian Medical Council et al., 2016). Greater use of interprofessional models of student and trainee supervision, particularly for interprofessional competencies, may be a way to create cultural change.

Attention to the implementation of interprofessional education from the perspective of power is also needed. This thesis has demonstrated that some students were unaware of the power gradient between the professions, despite the impact on interprofessional interactions. In particular, medical students (who hold the greater power) were less aware of the impact of a power gradient between professions. The implication is that students require better preparation and support for effective interprofessional learning in order to enable them to question the status quo. Interprofessional education must include a critical discussion about the nature of professions (including stereotypes and hierarchies) so that students have an understanding of the wider context in which their views and biases are formed. This discussion should include the potential for power and hierarchy to negatively impact on health professionals, the health system and patient safety and quality. In order to lay the foundation for this discussion, students will first need to appreciate the concept of unconscious (implicit) bias and how this influences their own behaviour and attitudes.

Teaching about bias, stereotypes and privilege may be challenging for both learners and teachers as they confront their own attitudes and beliefs (Sukhera & Watling, 2018). Students often find this material difficult to accept and may react negatively (van Ryn & Saha, 2011). This requires skilled teachers and sufficient time and resources dedicated to the subject in curricula. Nevertheless, a solid grasp of the concept of implicit bias and increased self-awareness would have benefits across other aspects of curricula and practice for health professions students, for example, understanding racism in Indigenous health (van Ryn & Saha, 2011). A strong analogy can be drawn between the power base inherited by medical students and doctors and the unearned privilege of being a white person in the health professions or in wider society (McIntosh, 1989; Romano, 2018). The privilege afforded by an entrenched systematically racist society are often invisible to those in receipt of such advantages, unless specifically pointed out (McIntosh, 1989).

Although the notion of the doctor as leader comes through in this research as part of medicine students' professional identity, this role is being questioned more some members of the medical profession (Abbasi, 2019; Varpio & Teunissen, 2020). The traditional view of leadership could be challenged by educators to assist students in preparing for a changing professional landscape. Distributed leadership, an action taken by the person with the best available skillset at that time, may be a safer and more effective model in an interprofessional team (Gronn, 2000; Varpio & Teunissen, 2020). Explicit teaching about different models of leadership to broaden student understanding may facilitate development of more nuanced leadership capabilities. As formal teaching to support professional identity formation is best accompanied by role modelling in the clinical setting, healthcare teams would need to model shared or distributed leadership and followership, ideally with explicit discussion (Varpio & Teunissen, 2020). This is further support for the role of ongoing interprofessional education post-licensure in the workplace setting, as a means of ensuring consistency through the

continuum of education. Students appear prepared to challenge traditional roles and power differentials. However, further discussion and debrief, focussing on this area of professional identity, may encourage and guide their development toward more collaborative roles.

The subordinate role taken by pharmacy students could potentially be addressed through changes in communication skills curricula. A greater focus on training for the increase in patient-centred roles may improve pharmacy students' confidence in professional interactions. Furthermore, training for communicating with doctors could be reworked into a more explicit model of equal professional communication. There has been less emphasis on professional identity in pharmacy curricula to date (Mylrea et al., 2017). However, with an increased focus on patient care, professionalism is emerging as a new debate and an explicit requirement in pharmacy education and practice, whereas previously it had been an implicit or assumed attribute of a pharmacist. As in medical curricula, educational support for development of professional identity represents an opportunity to prepare pharmacy students for collaborative interprofessional interactions.

If we are to succeed in improving interprofessional collaborative practice, we must go further than educational interventions and reform the structures that support our health professions relationships across the spectrum, in education and in other endeavours. There are multiple layers of systems that impact on an individual learner with complex interrelationships between these systems (Hamwey, Allen, Hay & Varpio, 2019). Institutional differences may be one such factor. The differences in perceived status between universities has been recognised previously (McKenna & Boughey, 2014). Many university rankings are dependent on research output which is heavily influenced by the presence of a medical program due to the high volume of clinical medicine research (Williams, 2010). Faculty development (for example, through workshops, mentorship and communities of practice) is likely to be important to ensure contact between students does not reinforce stereotypes

(Steinert et al., 2016). In particular, good knowledge of the professions involved, the power differential between them, team facilitation skills, and the ability to manage interprofessional friction are considered important for interprofessional educators (Bridges, Davidson, Odegard, Maki, & Tomkowiak, 2011; Reeves et al., 2016a; Steinert, 2005). However, these conditions extend beyond the classroom setting and the inequality between the professions in the broader societal context must also be acknowledged. Existing professional and institutional hierarchies act as a hidden curriculum that oppose educational efforts.

Although policy has mandated the inclusion of interprofessional education, in reality this has not trickled down to the level of implementation consistently as yet. There is inherent vulnerability in the current interprofessional curriculum across health professions education due to its diversity and dependence on local champions for implementation (Dunston et al., 2019). Despite the inclusion of interprofessional education in accreditation standards, the educators responsible for delivery report a lack of agency and power (Dunston et al., 2019). Parallels may be drawn with other recently mandated areas of practice such as cultural safety and competency where existing power structures and implicit bias need to be challenged by educators and learners in order to address health disparities (Curtis et al., 2019).

Interprofessional education is still perceived as a less important component of health professions curricula. For example, activities are not always assessed and educators report difficulties achieving space in curriculum (Dunston et al., 2019). Refinement of policy to specify details such as proportion of interprofessional activities to be included in programs and mandating assessment may address these issues. In addition to refining policy, empowerment of educators in interprofessional education is a crucial element that needs to be addressed.

Improved leadership in interprofessional education has been proffered by some authors as part of the solution (Brewer, 2016; Brewer, Flavell, Smith, Trede, & Jones 2014;

Dunston et al., 2016). Arguably, there are gains to be made from adopting a shared vision for the future of interprofessional education, as this serves to unite and motivate. Adoption of universally consistent and understood interprofessional competencies across professions is key to ensuring better collaboration across educational programs and education research (Brewer, 2016; O’Keefe, Henderson, & Chick, 2017). Agreed competencies also facilitate assessment of students across professions which is essential for raising the perceived importance of interprofessional education (Hafferty, Gaufberg, & O’Donnell, 2015). Within this context it will be important to address the inherent hierarchy between professions to ensure that leadership amongst health professions educators is not wholly usurped by medical educators.

The paradigm of health professions education research is also a part of the wider context for interprofessional education. There has been a large amount of work examining the short-term outcomes from single interventions but less emphasis on examining the wider influences (Reeves, 2011). Despite the importance of providing evidence for health professions education, it is difficult to conduct rigorous research on longer-term outcomes (Kuper & Whitehead, 2012). Challenges include participant recruitment. This thesis has identified multiple factors that influence participation and has argued that a multifactorial approach, targeting these factors, may address this problem. Arguably, effective communication to students of the research rationale and its potential impact on curriculum design is key and may be enhanced by improving health professions students’ understanding of the qualitative paradigm and reflexivity.

Student involvement in research is common and accepted as educationally beneficial (Madan & Teitge, 2013; Murdoch-Eaton et al., 2010). However, this involvement needs to move away from the wider dominance of quantitative research. As demonstrated in this thesis, teaching reflexivity would have transferable benefits for both research and practice.

Ideally, student involvement in health professions research would take the form of co-collaboration to facilitate more effective participant recruitment and promote deeper commitment and understanding of the process and intended outcomes.

6.5 Thesis Strengths and Limitations

A qualitative approach was appropriate for answering the research questions in this thesis (Castillo-Page et al., 2012; O'Brien et al., 2016) and generated rich data. The analysis of these data added to the depth of understanding of how pharmacy and medicine students experience interprofessional learning together and how the wider context of the relationship between the professions may influence learning and future practice. This thesis highlights the benefits of reflexivity in the process of qualitative research and in research and clinical practice more broadly. It also synthesises lessons learned from the challenges of participant recruitment and presents valuable suggestions for ensuring success in the process of educational research.

The original design of the research for this thesis also included quantitative elements. However, lack of participation rendered these elements unusable. Given the likely occurrence of unanticipated setbacks and failures in any large research endeavour, it is valuable to have been able to overcome these through flexibility and problem solving. The failure of research is not unique to doctoral candidature and many research endeavours falter before publication. However, development of strategies for managing the challenges that arise during the execution of a research project could be seen as an important outcome in doctoral candidature, ensuring a candidate capable of ongoing success in the research domain. The problems with student participation encountered in this thesis are common in health professions education research (Walsh, 2013) and the learnings will apply to others in this research field. Nevertheless, if it had been achieved, quantitative data could have been potentially useful in allowing triangulation of the qualitative findings and therefore adding a

level of rigour. However, the resulting focus on the rich deep qualitative data obtained has culminated in a strong narrative around the research questions.

Participants in this research were students from two undergraduate pre-licensure programs, (one medicine and one pharmacy) in a single city in Australia. This specific context may limit the external validity and generalisability of findings in a different context (Torre & Picho, 2016). In particular, students who select undergraduate study programs may have different characteristics to those in postgraduate health programs. These two universities may have cultural attributes that contribute to the results, for example, there may be specific attitudes promoted in a 'Group of Eight' university. Students studying different professional programs within a single university may not encounter the same degree of isolation from each other as the students in this research. Nevertheless, if these contextual elements are recognised there may be transferable outcomes for other programs, even for professions other than medicine and pharmacy.

6.6 Suggestions for Future Research

Ongoing research in HPE should focus on the wider influences rather than specific interventions. The impact of underlying power relationships between professions should be well understood to ensure contact between students does not reinforce stereotypes but instead, promotes collaboration. Further detailed understanding of how students experience the power differential between medicine and pharmacy will be useful in planning effective curricula, both uniprofessional and interprofessional. Ethnographic research may be a way to enhance and deepen our understanding of how students experience the traditional hierarchy. The use of theories and models that take account of the complex relationships and interactions that impact on learners will be more useful than studying interprofessional learning in isolation, for example, Bronfenbrenner's Bioecological Model of Human Development (Hamwey et al., 2019).

A more nuanced understanding of the preparedness of both educators and students to challenge traditional models is also needed if education is to facilitate a cultural shift toward collaborative practice. Further curriculum evaluation and qualitative research into educators' and students' perceptions and attitudes in this domain may be useful. The areas of potential curriculum change highlighted in this thesis also provide fertile ground for further research and evaluation. These include teaching different models of leadership, qualitative research methodology (including reflexivity) and communication skills training for pharmacy students. This may provide further evidence to underpin and guide the adoption of curriculum change and faculty development.

Prescribing reforms and changes in policy and accreditation have been suggested as strategies for supporting cultural shift. New models of interprofessional collaboration, learning and supervision (particularly in the clinical setting) will provide further opportunity to explore the influence of these wider reforms on learners' attitudes and behaviours. Utilisation of the JET framework in evaluation of interprofessional learning may help promote consistency of evidence (Dunston et al., 2019). Research outcomes pertaining to levels 3 and 4 of the JET framework (that is, changes in behaviour, organisational practice and benefit to patients) will provide greater assurance of the clinical benefits of interprofessional learning and may help with alignment between healthcare and education.

6.7 Conclusion

This thesis provides a critical analysis of interprofessional learning between pharmacy and medicine students. It provides a significant contribution in questioning the value of conducting interprofessional education without a systemic change in the wider context of interprofessional culture and practice. It concludes that a continued focus on interprofessional education without attention to the wider influences and supporting institutional structures will fail to address the underlying professional culture and power relationships that undermine

collaborative practice. This critical analysis also extends to the paradigm of health professions education research. It highlights the need to approach this research differently from an institutional perspective by including students in co-collaboration and increasing the emphasis on reflexivity and qualitative methodology in curriculum.

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Appendix

Publications During Candidature as Part of Thesis

Paper 1: The Clinician Educator as Qualitative Researcher

Citation:

Thomas, J. (2019). The clinician educator as qualitative researcher. *Clinical Teacher*, 16(6), 646-648. doi: 10.1111/tct.12977



The clinician educator as qualitative researcher

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As a specialist physician and clinical educator, I work across university and hospital-based medical practice, providing acute inpatient and chronic outpatient care as a member of an interprofessional team. Like all medical practitioners, I have been educated in the medical model and have been taught to value randomised controlled trials as the gold standard in research. In my specialty general medicine and clinical pharmacology training, and subsequent career, I have chosen to focus on scholarly activities that are applicable to clinical practice, such as guideline writing and teaching. As a clinician educator, I was further indoctrinated and invested in the positivist paradigm of quantitative research. My clinical career has often involved working with other professionals and I enjoy collaborative practice. Hence, my most recent training has been

within a PhD programme, where I am exploring aspects of interprofessional learning between pharmacy and medicine students.

I encountered the qualitative paradigm as a novice, but arrived with preformed values and attitudes, particularly around levels of evidence and the inherent value of randomised controlled trials. The experience has been rewarding and enjoyable, but undoubtedly the journey included dissonance around my long-held understanding about the nature of scientific evidence. This came most sharply into focus when discussing my PhD with medical colleagues and hearing their contempt for lack of 'hard outcomes' in educational research. This negative attitude to qualitative research has undoubtedly affected my perception of the value of my own research, and is echoed in the lack of prominence that it

receives in the literature and the disparate rates of publication in medical journals. The assertion that qualitative research holds little value for the readers has been cited as one reason why high-impact journals do not publish qualitative studies, although this has been refuted.¹

The pace of my day-to-day life was dramatically altered during my candidature, with reading, writing and reflection replacing hectic clinical decision making (Figure 1). I thoroughly enjoyed the opportunity to slow down, indulge in reflection and read more widely around a topic. The transition to qualitative researcher required a significant shift in my knowledge, values and attitudes. In order to become a researcher in this new paradigm, I had to look outside medicine and medical education. Therefore, I embraced an inherent need to become interprofessional in order

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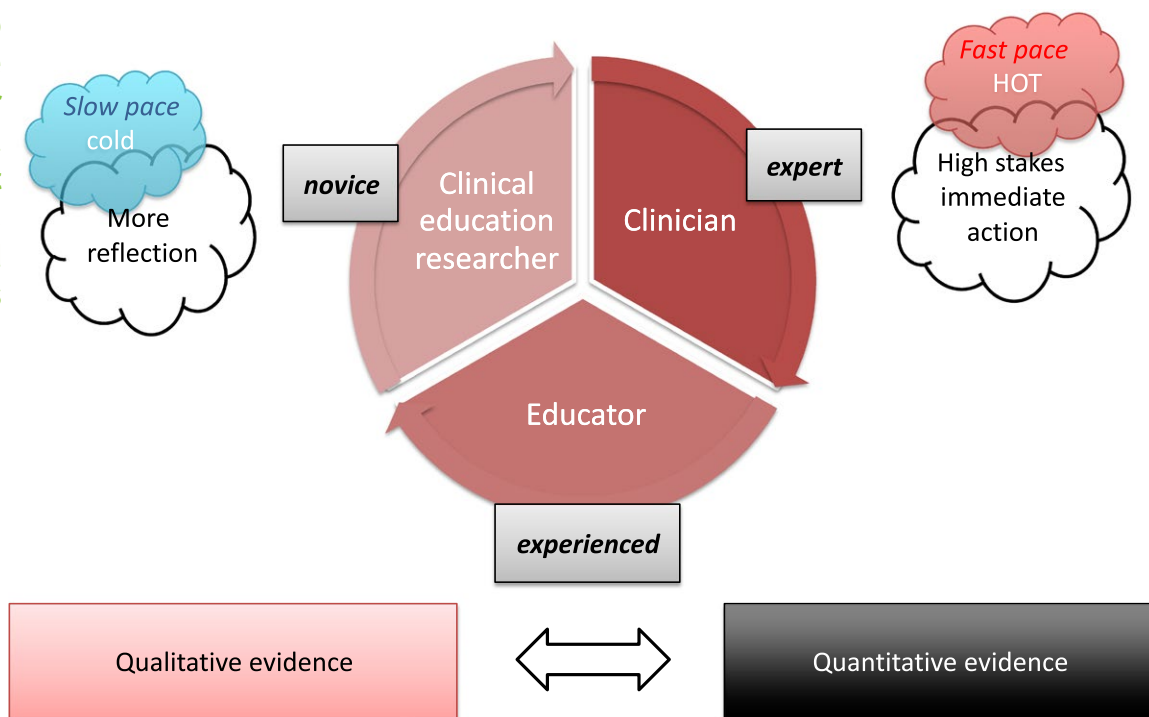


Figure 1. The transition to qualitative researcher

to learn these methods. As part of the transition, my position on the value of research methods has evolved. I believe the richness of data provided by qualitative methods can give an understanding that numbers will fail to achieve; and this is a good fit for educational research. Furthermore, as the context for any data is vital to comprehensive understanding, I see the narrative around quantitative research as extremely valuable. Reflexivity is an awareness of how the researcher's role affects the research process and outcomes, and vice versa.² Reflexivity involves interpretation as well as reflection: thinking about experiences and questioning the ways of doing. This interpretation also takes account of assumptions on the part of the researcher, including their values and attitudes.³ Thus, in qualitative research it is essential for a researcher to reflect on the methods and their position in the data. The role of the educator as a researcher can be seen as a conflict of interest because of the student-teacher power differential, and self-awareness is crucial

in this context.⁴ Reflection is not a routine occurrence in quantitative clinical education research or practice, however, which seems to be a missed opportunity. The value of reflexivity for clinical practice has been noted in medical education literature because of the positive impact that self-awareness has on the doctor-patient relationship.⁵ Reflexivity should be part of all clinical practice and research.

Recognising and acknowledging the inevitable dissonance that is part of this journey has been helpful. Discussion with experienced researchers is a way to add other perspectives, as is sharing experiences with other learners. Having been reluctant to pursue a research focus in the past, I found it useful to begin my journey with coursework as a lead-in, and was immediately connected to other learners in this setting. Looking to the qualitative research literature was particularly affirming, giving the sense of a wider community of practice, facing common issues and often providing further insights. Supervision, with an

appropriate level of support that matches a candidate's needs, is essential. In particular, I benefited from an understanding of the skills and experience that I brought to the candidature.

In any transition, sharing experiences and reflection are valuable tools for managing the inevitable dissonance that arises. For researchers, a variety of formal and informal meetings can provide the opportunity for connection with like-minded people. It is crucial for researchers across all paradigms to reflect and be reflexive. A greater prominence of the qualitative research paradigm in medical education curricula may assist in promoting the value and practice of reflexivity for others.

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Paper 2: Improving the Participation of Students in Health Professional Education

Research

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Discussion Paper: Improving the participation of students in health professional education research

J. Thomas¹, K. Kumar² & A. Chur-Hansen¹

Abstract

Health professional education (HPE) has grown as a field of research, with an increasing number of publications since the 1990s. Interprofessional education is a specific area of growth with ongoing debate in the literature, at least in part due to the challenges that exist in implementation, and further research is needed to inform ongoing practice. Participant recruitment is a major challenge, and poor participation rates lead to bias and a failure to demonstrate outcomes.

There is a lack of information about why students decline to participate in research to inform and improve education. Motivation for volunteerism in other contexts and recruitment of human participants in other types of research are examined as a way to understand the likely motivations of student participants. Disincentives to participate include time commitment, survey fatigue and a poor understanding of the value of HPE research and the processes involved. The ethical considerations for teacher-researchers add another layer of complexity to recruitment.

A multifaceted approach, involving all stakeholders and targeting known influences, is needed to improve recruitment in health professional education research, and clear communication of the research rationale and its potential impact on curriculum design is essential. Explicit communication and adequate information to allow informed student choice are also required, while improved literacy in HPE research may provide students with a better basis for decision making when considering participation. In addition, partnership and student co-design could be a mechanism for more meaningful engagement.

Keywords: medical education; health professional education; participation; recruitment.

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IMPROVING THE PARTICIPATION OF STUDENTS IN HPE RESEARCH

Introduction

Research and scholarship are essential for the advancement of health professional education (HPE) (Heflin, DeMeo, Nagler, & Hockenberry, 2016; Keune et al., 2013; Schuwirth & Durning, 2018). Such research requires the active participation of a range of stakeholders. Due to their unique position within the HPE system, students, as stakeholders, can provide valuable insight into different aspects of teaching and learning activities and processes, and promote innovation (Cook-Sather, Bovill, & Felten, 2014; Matthews et al., 2018). HPE research includes numerous studies involving undergraduate and postgraduate healthcare students, however very few of these studies discuss the complexities and challenges of the involvement of students as research participants. In the context of a broader discussion about the responsible conduct of education research in the health professions (Maggio, Artino, Picho, & Driessen, 2018), student participation in HPE research deserves further scrutiny.

Tertiary education literature has noted the challenges encountered in relation to student participation in research. Reflecting the problems with recruitment encountered in other areas of research involving human participants (McDonald et al., 2006), authors have noted that participation rates of one third and attrition rates of 20% are common in research involving university students (Cyr, Childs, & Elgie, 2013). Studies which fail to achieve their recruitment targets are unlikely to be published, thus making it difficult for researchers to learn from their experience. The validity of education research has been questioned in light of poor participation rates, and the high rate of withdrawal in longitudinal studies raises the question of bias (Callahan, Hojat, & Gonnella, 2007; Sarpel et al., 2013; Walsh, 2013). Similarly, the credibility and usefulness of educational research may be questioned due to the response bias associated with those students who do volunteer to participate and how representative they are of the larger student cohort (Walsh, 2014). Participants in longitudinal education research are more likely to have performed better academically and less likely to come from a minority group, which may limit transferability of results to the wider student population (Callahan et al., 2007). The ethical issues involved in working with students as research participants in education research also add to the complexity, since the researchers may also be the teachers (Brown, 2010; Chen, 2011; Ridley, 2009; Voo, 2009; Walsh, 2014).

Whilst the problem of recruitment in health professional education research is acknowledged, student participation in HPE research is not well articulated in the literature (Chen, 2011). Currently, there is little published literature exploring the reasons why students do not participate in education research (Khatamian Far, 2018; Stovel, Ginsburg, Stroud, Cavalcanti, & Devine, 2018). However, it is important to develop more nuanced understandings about the elements that influence student participation in HPE research if we are to meaningfully engage and empower this valuable stakeholder group.

The aim of this paper is to illustrate the multiple interrelated influences on student participation in HPE research. In the next section, we consider the motivations and disincentives for participation and the ethical complexities characterising healthcare

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students' participation in education research. We conclude the paper with an exploration of what the HPE research community might do to improve student participation in education research.

Influences on student participation

In order to understand the factors influencing student participation, we looked outside of the education research literature to the clinical trials literature and the practice of "volunteering" in a broader sense. This research provides a framework to situate and understand the influences on student participation in education research.

Motivation to participate

Exploration of the practice of "volunteering" may afford insights into students' motivations to participate in research. Although complex and multifaceted, with variation between individuals, the motivation to volunteer can be largely distilled down to benefit to self and benefit to others. Benefit to self encompasses both intrinsic and extrinsic rewards. These two categories are interdependent and are also impacted by the expectations of others. Commonly cited personal drivers for volunteering are the desire to help others and to feel useful or needed (Cuskelly, Hoye, & Auld, 2006; Holdsworth, 2010). Other personal benefits include social contact, gaining new skills, improved career opportunities and financial reward (Edwards et al., 2002; Jenkins & Fallowfield, 2000; Limkakeng et al., 2013; McCann, Campbell, & Entwistle, 2010). In some cases, volunteers will be driven to meet the normative expectations of others by donating their time or skills (Einolf & Chambré, 2011; Holdsworth, 2010). When focusing specifically on students, the subtle or overt potential for students to gain a real or perceived personal advantage (e.g., opportunity for improving performance through participation in additional educational activities or being seen in a positive light by faculty) may also act as an inducement to participation (Bartholomay & Sifers, 2016; Boileau, Patenaude, & St-Onge, 2018).

Altruism, or the desire to help others, is a commonly cited motivation for participation in clinical trials research (Newington & Metcalfe, 2014). Education research may be expected to hold a similar attraction for health professions students, but educational improvement within health is perhaps not rated as highly or seen as a worthy cause in comparison to the possible health benefits clinical trials can yield. This is an aspect that is yet to be explored in empirical research. Moreover, the translation of the findings of education research into teaching and learning practices and curricula occurs over the long term and may be unseen by students. This lack of immediacy may reduce the perceived value and benefit (either to oneself or others) of participating in education research. While altruism might incline a student towards participating, it does not always ensure participation (McCann et al., 2010). Furthermore, even those who are altruistically oriented are more likely to participate if they believe they will personally benefit (McCann, Campbell, & Entwistle, 2013).

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External incentives, mostly financial, are also regarded as positively influencing participation rates, and incentives are often used in research studies to compensate participants for their time and contribution (Edwards et al., 2002; Phillips, Reddy, & Durning, 2016; Thornton et al., 2016). However, such rewards and incentives can have unintended negative consequences and result in an opposite effect to that which is intended. For some people, the intrinsic drive to volunteer may be lost or diluted with the provision of payment or incentives. The desire to benefit others is linked to intrinsic motivation, and this is more enduring and rewarding than extrinsic motivation arising from incentives (Holdsworth, 2010; Warburton & Smith, 2003). Monetary incentives are sometimes perceived as implying that the task is difficult or unpleasant (requiring “compensation”), and this may act as a disincentive (Gneezy, Meier, & Rey-Biel, 2011). However, there are established models in which students are routinely rewarded for participation in research, for example, in undergraduate psychology, where course credits are awarded (School of Psychological Sciences, 2017). Although this is seen by some as a valuable way to promote understanding of research and research conduct, the ethics of this approach have been questioned (Cleary, Walter, & Jackson, 2015). Of note, most published HPE research studies do not describe incentives for participation (Stovel et al., 2018).

Disincentives for participation

Time required to participate in research is a well-recognised disincentive (Christakis, 1985; Keune et al., 2013; Sarpel et al., 2013). Health professions students typically have heavy course workloads, including clinical attachments; thus, additional time commitments for research are likely to be perceived as a significant impost. Overload, or fatigue due to multiple evaluators and HPE researchers targeting the same student cohort, can also be an issue for students (Adams & Umbach, 2011). This further adds to concerns about whether student participants are representative of the wider student group, as those who are less academically sound or have other commitments may be less inclined to participate due to time constraints (Callahan et al., 2007).

More broadly, the local educational context, culture, expectations and beliefs are also likely to be influential. There are also peer influences on participation. Conformity is a powerful and pervasive influence on how people behave and interact in groups, and this may have implications for participation, non-participation and bias in HPE research (Beran, Kaba, Caird, & McLaughlin, 2014). An understanding of student norms of participation, and the factors that influence this, is important. The wider context of staff and community expectations in this regard may be equally important. In some programs, the expectation from staff is that students routinely participate in education research as part of their learning (School of Psychological Sciences, 2017).

Research literacy

Students' level of familiarity with education research is an important consideration. It is possible that a failure to make explicit the value of health professional education research and the processes involved is a less obvious but critical negative influence on

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student participation. There is a paucity of education research training in many health professions programs, and where students are trained in research, it is heavily weighted towards the clinical paradigm. The differences between the clinical and educational paradigms are well established in the literature (Schuwirth & Durning, 2018). Thus, students may be unfamiliar with the conduct of health professional education research, including, for instance, qualitative study designs and how research informs teaching, learning and curricula. This also intersects with students' capacity to see the relevance and benefit of research to themselves or others.

The often-blurred distinction between education research and evaluation of teaching and courses may unduly negatively influence student participation in research. There is evidence of student skepticism of the value of university surveys to evaluate higher education programs (Spooren & Christiaens, 2017). Although disgruntled students may utilise evaluation surveys for their complaints, they often perceive that few actions result from them (Uttl, White, & Gonzalez, 2017). This may, in part, reflect poor communication from staff about how the outcomes of evaluation have been used to implement program and curriculum improvement. This is a vicious cycle, since university surveys for evaluation of teaching are widely dismissed by teaching staff as poor-quality evidence due to low participation rates, and participation in evaluation is enhanced by student perception that teachers will utilise the results (Hornstein & Law, 2017; Iqbal, Lee, Pearson, & Albon, 2016; Uttl et al., 2017). This conflation between educational evaluation and research can engender poor perceptions and attitudes about education research, which impact on intended and actual participation. Both health professional education evaluation and research require high levels of student participation to yield meaningful results and inform educational improvement.

Ethical considerations

The ethical considerations associated with education research are immense and add another layer of complexity to student participation in health professions education research. The teacher as researcher has generated considerable debate. The main ethical concern is that of coercion (Aycock & Currie, 2013; Sarpel et al., 2013). Some maintain that a teacher drawing upon their own student cohort as participants is fundamentally unethical due to the power imbalance between student and teacher or educational institution (Ferguson, Yonge, & Myrick, 2004). This may compromise the nature and quality of the data that are collected. Other authors have noted the blurring of boundaries and roles that can occur when a teacher takes on the role of researcher of their own teaching program (Boileau et al., 2018; Regan, Baldwin, & Peters, 2012). Parallels can be drawn between the conflicts of interest experienced by the physician-researcher and educator-researcher (Henry & Wright, 2001). The double agency of fulfilling two roles simultaneously may lead to ethical threats at various stages of the research process: recruitment, consent, confidentiality and participant withdrawal (Ferguson et al., 2004).

Although some have suggested that health professions students are better informed about research compared to many target populations, their position may render them

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more vulnerable to perceived pressure or coercion by teacher-researchers (Bartholomay & Sifers, 2016). The validity of informed consent in the context of the student-teacher power differential is questionable, and the decision to participate may be significantly influenced by the (perceived or real) potential effect on grades or career. These ethical considerations have major relevance for education research in terms of balancing the needs of teachers and institutions to examine and critique educational practices through evaluation and research and what may be considered as reasonable means of engaging students in research. Many have argued that education research is of clear benefit to students and to the curriculum and have suggested that explicit voluntary consent is not warranted (DuBois, 2002; Forester & McWhorter, 2005).

The level of scrutiny of education research by institutional ethics committees and other bodies compounds the problem. In the past, health professional education research has been viewed, understood and treated in different ways by institutional ethics review committees. Differing levels of scrutiny of the education research process, ranging from exemption to full review, has meant variability in the protection offered to participants, including students (Chen, 2011; Regan et al., 2012). With the expansion of the field, however, the review of education research has become more uniform, and most studies usually require formal ethics approval, or at least need to demonstrate adherence to ethical principles for publication (Boileau et al., 2018). Still, in some instances, the lack of education research expertise on these committees can add to the disparity in the review processes (Brown, 2010). The lack of distinction between evaluation and research mentioned earlier can also add to the confusion.

Despite being categorised as low risk, health professional education research can have a range of unforeseen consequences for participants. For students, these may include diversion from academic commitments, psychological effects, delayed responses to the research phenomenon being studied and the establishment of new dynamics. Unintended psychological effects may occur when the topic of study encroaches on a sensitive topic in health education (e.g., learning about death and dying), and this impact may be felt after the study has concluded, leaving the student without a clear avenue for seeking assistance. In addition, despite attempts to preserve anonymity, a teacher-researcher may recognise a participant and react consciously or unconsciously to their comments. The unintended consequences of education research participation remain an area where evidence is lacking.

The above analysis has illustrated that there are multiple interrelated influences on student participation in education research. While a number of ethical concerns have also been raised, interestingly, students do not appear to have the same concerns about risk and, reportedly, value education research (Forester & McWhorter, 2005; Sarpel et al., 2013), yet their participation in education research is poor.

Recommendations

In this section, we consider what can be done to improve student participation in education research within the health professions. The strategies and potential solutions to the problem of students as participants in health professions education research will be complex and multifaceted.

Educators and researchers are familiar with the need to understand local context and the multiple factors that may influence an educational method (Schuwirth & Durning, 2018). A similar approach will be needed in facilitating student recruitment into education research. Recent evidence from the clinical trials context has identified that tailored approaches that address the local context are successful in improving recruitment (Rooshenas et al., 2019). Notably, the majority of issues identified pertain to communication of the trial information to eligible participants. This implies that clear communication about the purpose, potential outcomes and application of education research; the commitment required of participants; and how their data will be used is paramount. This can foster mutual respect between researchers and participants and enable students to make informed choices about participating in education research. Multiple and complementary modes of communication should be utilised to reach all potential participants. If provided with sufficient disclosure and opportunity to consider options, students may be more likely to consent to participate (Henry & Wright, 2001).

Students are a hugely diverse group and will have different perspectives and motivations for participating in education research. Context will dictate which factors are most important in harnessing individual student motivation to participate. Some students will need to be shown how education research can exert a beneficial influence on curriculum and have the benefit to self and others made more explicit and visible. Thus, they will require a level of immersion in the education research paradigm to ensure they have the opportunity to better understand the implications of such research. Students may also benefit from a more comprehensive approach, where educational theory and education research methodology (particularly qualitative and mixed methods) are embedded into health professions curricula to enhance research literacy. Participation in education research could be viewed as an educational activity in itself, provided sufficient information and scaffolding is given to participants so they can engage meaningfully (Chen, 2011).

While teacher-researchers need to ensure effort is directed at engaging students in education research in order to gain insights into teaching and learning activities and curriculum, they must also reflect on and be vigilant about the ethical issues inherent in studying their own students (Boileau et al., 2018; Cleary et al., 2015). Staff who are not involved in a dependent relationship with students should be selected to communicate with and recruit students to avoid coercion and pressure (Bartholomay & Sifers, 2016). Role modelling excellence in the responsible design and ethical conduct of health professional education research (Maggio et al., 2018) should be a goal of all educators. Teacher-researchers and other education researchers need to pay careful attention to the ethical principles of respect, welfare and justice (Boileau et al., 2018).

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Researchers should avoid collecting personal information unless it is directly relevant to the research, to safeguard confidentiality (Boileau et al., 2018). An opt-out strategy of recruitment is more likely to increase participation (compared with opt-in recruitment), but researchers should ensure that they address any perception of adverse consequences from non-participation. If incentives such as course credits are offered, there must be alternatives of equal time and effort available (Cleary et al., 2015).

Some authors have recommended specialised health professional education research review panels to improve quality and consistency of review (Heflin et al., 2016). Cultivating expertise in education research within institutional ethics review committees will assist in producing high quality research protocols, enabling role modelling of ethical principles in research design and conduct. Clarity about when data are collected for evaluation or for research is imperative to ensure appropriate ethical review (Sandars, 2009).

Larger collaborative health professional education research groups afford greater support for design and implementation than can be afforded a lone teacher-researcher. A coordinated approach among researchers may also address, in part, the issue of participant overload and fatigue and would likely increase the quality of those studies (Regan et al., 2012). An organised system allowing students to review all requests for participation in health professional education research studies in the coming year may allow students to develop a better understanding of the requirements as well as impacts of participation. The development of de-identified longitudinal education research databases may be a way to reduce the need to repeatedly approach students for information (Cook, Andriole, Durning, Roberts, & Triola, 2010). Examples of such databases include the Medical Schools Outcome Database (MSOD) in Australia and the Research on Medical Outcomes (ROMEO) registry in the United States of America (Thayer et al., 2016). As with any research design, health professional education researchers should ensure that all participant tasks are as efficient and streamlined as possible, as this is likely to pay dividends, particularly in retention for longitudinal studies.

Involving students as partners in co-design of education research may be the best way to deepen their understanding of the educational paradigm. This may translate into increased participation, as trusting collaborative research relationships are developed and the benefits of education research to themselves and others is made more visible. Student researchers may be able to contribute to projects by opening up areas of poor understanding and identifying alternative communication channels, targeted recruitment strategies, effective language (ensuring clarity of communication) and building trust with participants. Student partnerships with academic staff in teaching and learning have been embraced in higher education and may provide some useful models (Cook-Sather et al., 2014; Matthews et al., 2018). Although such partnerships take many forms, the common features are a collaborative, reciprocal process through which all participants have the opportunity to contribute to elements of teaching and learning. Positive experiences in participating in education research may also foster student interest in future HPE career pathways.

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Conclusion

Health professional education research is needed for the advancement of the field. As major stakeholders who are at the centre of the education process, health professions students have many insights to contribute in terms of pedagogical methods and curriculum innovations. When student participation in education research is not forthcoming, it represents a significant missed opportunity and impacts the quality and generalisability of findings. Health professional education researchers need to recognise that student participation in education research is a complex issue, the challenges of which cannot always be easily anticipated or managed.

Improving health professions students' participation in education research will require a multifactorial approach that may involve a range of strategies tailored to the local context. Communicating effectively about the rationale, process and outcomes of research is key to improving stakeholder engagement, and most effort should be expended on this aspect. Oversight and monitoring of research projects to ensure efficient data collection methods will help to prevent participant overload and "survey fatigue". More broadly, educators should seek to embed education research training into curricula, thus developing higher levels of education research literacy among students. Raising the expectation of student involvement may be best achieved by partnering with students in co-designing education research.

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Paper 3: What Does Learning Together Mean for Pharmacy and Medicine Students: Is it Really About From and With?

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What does learning together mean for pharmacy and medicine students: is it really about from and with?

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Abstract

Healthcare students from different professional backgrounds are often brought together under the banner of Interprofessional Education (IPE) in an effort to improve collaborative practice. Despite the demonstrated positive impact of IPE on students' knowledge, skills and attitudes, it is not clear what students think about learning with students from another health profession. The aim of this study was to explore pharmacy and medicine students' views and experiences of learning together.

Participants were Year 3 Pharmacy and Year 4 Medicine students, with qualitative data gathered via a written reflection.

Three main themes were identified. Students were accepting of learning with the other professional group. Learning about was evident, particularly in relation to each other's roles and contributions to patient care. Learning from another professional group was the most problematic as students tended to view and treat knowledge as a commodity to be acquired from another rather than something that could be jointly developed.

While medicine and pharmacy students' valued learning with and about each other, they were less likely to engage in co-constructing and sharing new meanings and thus learn from one another. To provide a basis for meaningful collaborative practice, IPE needs to challenge students' fundamental assumptions, beliefs and values about learning with, from and about other professions.

Keywords: , Interprofessional, Health professional education, Medical Education, Pharmacy

Introduction

Greater collaboration between pharmacy and medicine is linked to demonstrated improved patient outcomes, particularly in the management of chronic disease (Daniels 2008, Gallagher and Gallagher 2012). This is a particular necessity in the pharmacotherapeutics context, as the increase in available medications and multi-morbid patients add to the complexity of patient management. Polypharmacy is a common situation and the likelihood of drug interactions for these patients, increases with multiple medications (Barton et al. 2012, Roughead et al. 2013). The resulting therapeutic regimens are difficult for a single practitioner to navigate safely and require a multifaceted and collaborative approach.

A collaborative approach to care involving multiple healthcare professionals is a complex undertaking for several reasons, including: power relationships; need for common language; professional culture; workflow and workload pressures. Although medicine and pharmacy share similar roots and many common values, the two professions have evolved separate cultures and different scopes of practice (Austin et al. 2007, Gallagher and Gallagher 2012, Gilbert 2001). The traditional relationship between them is unequal and a power gradient is evident, with medicine as the dominant profession, afforded by societal perceptions of physicians as saving and prolonging lives (Austin, Gregory and Martin 2007, Barrow et al. 2011). Despite the potential to contribute to patient safety, the pharmacist's role is seen as subordinate to the physician's role (Routledge 2012). In keeping with this power gradient, most pharmacists are reluctant to question a physician's authority and opinion about prescribing even though they have a more detailed knowledge of drug properties, interactions and effects, by virtue of their training (Rosenthal et al. 2010). This entrenched hierarchical relationship between pharmacy and medicine makes it difficult to establish practice that is truly collaborative. In addition, changes in the nature of pharmacy practice over recent years, may further exacerbate the conflict between the professions due a perceived need to protect their own professional territory (Rosenthal, Austin and Tsuyuki 2010).

Interprofessional education (IPE) is an approach to enhancing the contact and learning between different professional groups in order to improve the future collaborative practice of health professionals (Greene et al. 1996). The widely accepted definition of IPE is where "... students from two or more professions learn about, from and with each other to improve collaboration ..." (Health Professions Network Nursing and Midwifery Office 2010). Many studies have demonstrated positive impacts of IPE on health professional students' attitudes, knowledge, skills and behaviours; and in some cases these have been shown to translate into later practice (Reeves et al. 2016, Reeves et al. 2008, Tolleson et al. 2016). Furthermore, the literature shows that students' attitudes to IP practice often improve after contact with another professional group (Van Winkle et al. 2012, Whitehead and Kuper 2012). Students also rate IPE as a positive experience; with the overarching sentiment that they believe that IPE is worthwhile. Despite an abundance of evidence regarding the outcomes of IPE, what is missing is a more nuanced understanding of what pre-registration students think and experience in learning with students from another professional group. This study explores pharmacy and medicine students' views and experience of learning with another health profession. We posed the research question: what and how do students think they learn with, from and about each other?

Methods

The relevant institutional Ethics Committee granted ethics approval.

Context and participants

The participants in this study were undergraduate pharmacy and medical students from two universities in Australia. The medical student cohort comprised 198 year 4 students and the pharmacy cohort comprised 114 year 3 students.

Undergraduate pharmacy and medicine programs in Australia have predominantly secondary school leaver entry and are 6 and 4-year programs respectively. Students provided written consent and participation in the research was voluntary.

Forty-three students participated in the study. The mean age of medical students was 21 years (range 20-24), 58% female; pharmacy students mean age = 22 years (range 19-32), 76% female.

Data collection

Data were collected via a reflective writing activity. This activity was designed to probe participants for their views about learning with students from another healthcare profession.

Data analysis

All reflective pieces were de-identified and assigned a unique ID number by administrative staff. Data were analyzed using a thematic analysis approach, as outlined by Braun and Clarke (Braun and Clarke 2012). Analysis involved a number of interrelated steps including: familiarization with the data, reading and rereading. Inductive coding of individual pieces was then performed. The second and third authors reviewed the first author's analysis, sampling the raw data, to determine congruence between reported themes and ensure no themes were missed. Themes, subthemes and codes were listed in a matrix with illustrative quotes from individual participants for each code. Later, codes were collapsed where it was apparent that there were similar themes or clustering of themes. Coding was performed until saturation was reached, which was after a total of 38 reflective pieces (19 medical and 19 pharmacy). The codes were grouped into subthemes and themes linked explicitly to the research question.

Researcher reflexivity

The insider position of the first author, as a clinician from a General Internal Medicine and Clinical Pharmacology background working in an interprofessional team environment, and as a university academic responsible for designing and implementing IPE, afforded first-hand knowledge of the setting and the participants which was invaluable in interpreting the study findings. This intimate knowledge related to the curriculum; the culture within the medical program and clinical practice environments; and the relationship between teachers and practitioners in pharmacy and medicine. The other authors had little familiarity with participants and the setting, and this enabled a balance of insider and outsider perspectives to inform the interpretations made in this study.

Ethics approval was granted by relevant Ethics Committees of The University of Adelaide (15/02), The University of South Australia (03/15) and Flinders University (OH-000-47).

Results

Three main themes were identified related to what medical and pharmacy students' view and experiences are in learning with students from another professional group. These were: "Learning with" which incorporates the emotional language used to describe the contact between groups, the levels of comfort and familiarity with the other group as well as linkages drawn to contact between professions in other settings. "Learning from" which includes students' recognition of complementary skillsets and field of knowledge of the two professional groups. "Learning about" which encompasses the expression of views about their own and other professions' role in the healthcare team, the notion of a professional hierarchy and the power differences between them. Illustrative quotes are presented for each theme (Participant ID: M= medicine, P= pharmacy).

Learning with

Students reported they were generally comfortable in learning with other profession and welcomed the opportunity to learn with a different professional group. They tended to frame the contact between professional groups in positive emotional language, including the adjectives: interesting, enjoyable, enlightening, happy and valuable. One source of transient apprehension and discomfort for some students was the unfamiliarity of students from the other professional group. Some pharmacy students reported that contact with the other group made them more comfortable in challenging the traditional power relationship between them, but it is unclear if they would enact this in practice. Some students reported that learning with another professional group had enhanced their appreciation of how to communicate with the other professional group. Both medicine and pharmacy students could see the value in learning together with another profession before graduation, because of the need to work together later. Many students drew links between better patient outcomes and the team approach to clinical practice.

"They were very nice people who had similar [sic] chosen a similar path to us medical students and so had similar priorities and values"(M15).

"I will be more proactive and less intimidated by the status of a doctor [physician]" (P36).

"hope both professions could work more closely together than they currently are because i think it will result in better medical care" (P31).

Learning from

Both pharmacy and medical students recognized the complementary nature of the knowledge base of the two groups'. However, an interesting contradiction emerged as the students spoke about their level of knowledge and contributions. Pharmacy students tended to see their own knowledge deficits as barriers to engagement and collaboration with another profession, while medical students viewed their knowledge deficits as an area for improvement rather than an impediment to collaboration. Students described plans to increase their own knowledge by studying resources such as past lectures, books, online tools and modules. Medical students in particular flagged an intention to utilize ward pharmacists as a resource in the clinical setting to bridge gaps in knowledge for patient care, but it was not clear how they would go about this activity. "Any time that there is a pharmacist attached to the team I am on, I will ask lots of questions about drugs that I don't understand, and medication regimes for different diseases.to broaden my knowledge "(M3).

Another contradiction also emerged in how medical and pharmacy students thought about each other's knowledge. While some medical students perceived pharmacy students as highly knowledgeable, with greater knowledge and depth of understanding on specific areas, particularly basic pharmacology, others made judgments about pharmacy students' relative lack of clinical experience, inferior levels of knowledge and inability to apply knowledge in clinical settings, which they felt prevented interaction as equals. "I felt that the pharmacy students were lacking in knowledge in key aspects that prevented them from making equal contributions compared to myself and my medical student partner. Even when I outright prompted the pharmacy students for their thoughts, too often they struggled to make a substantial comment" (M10).

In contrast, pharmacy students were less likely to talk about medical student knowledge deficits, but some did note that medicine students' relative lack of detailed medication knowledge was not befitting the prescribing role of a physician. "it makes you realise how little doctors [physicians] know about medicines and their specifics. It's not their fault as its not really in their curriculum, but its scary when you consider they're allowed to prescribe and we're not" (P31).

Learning about

The physician as leader was a common theme. Medical students saw themselves as leading the engagement between professional groups and parallels were drawn with the professional hierarchies observed in their clinical experience. There was a perceived need to prompt and push the other professional group reflecting a sense of arrogance and superiority. Medical students articulated the physician's role within the healthcare team as that of coordinator, gatekeeper and final arbiter, determining which other professionals should be involved and how.

The role of pharmacist was clearly articulated as a medication expert, but there was a clear sense this was a subordinate role to that of the physician, reflecting in the use of words such as; "support", "assist", "aid", "advise", "suggest". Students perceived the pharmacists' main role was to act as a safety net for physicians as in terms of providing a second check in the prescribing process. This safety net role was most clearly articulated by pharmacy students. Students expressed how a pharmacist could add to patient care through their role in implementing a physician's plan, mostly by advising patients on optimal use of medicines. "As a pharmacist, realistically, we are to double check that what the doctor [physician] has prescribed and avoid potential errors. Unrealistically, we would take part in the prescribing decision to help decide the best pharmacological treatment, if needed, for the patient."(P26).

The concept of the pharmacist (and allied health professionals more generally) providing a different and complementary perspective on the patient's care was expressed, although this was not always seen as a positive attribute and some medical students were dismissive of the different approach. "they have a very different perspective on patient care. In addition, the 'pharmacist' seemed to want to limit the number of medications to minimize side effects rather than add medications to treat all the conditions which was interesting. This seemed to demonstrate a theoretical understanding rather than adapting to a real-life situation where multiple disease processes and prioritization is required" (M9). Integration of pharmacy students' input into therapeutic regimes and medication choices was seen to be at the discretion of the physician, i.e. able to be dismissed or ignored. "You should ask for the pharmacist/other allied health where appropriate of their specific options and try and endorse that where possible. However, you have to make the final decision on what is most appropriate for the patient" (M14).

Discussion

Undergraduate pharmacy and medical students were largely positive about learning with and about another profession. Students could see benefits to patients and benefits to their future practice in learning about their professional roles and those of their colleagues. However, students did not appear to value and invested little effort in co-constructing understandings and creating shared knowledge. Medical students demonstrated a marked propensity toward assuming the role of leader and saw this as part of both their scope as learner and group participant, as well as part of their professional role. Pharmacy students overwhelmingly adopted a subordinate role, providing information support and viewed their professional role as advisory, providing verification, rather than active co-contributor.

The traditional relationship of physician as the dominant professional appeared in reflections of both groups of students. The concept of the pharmacist making important contributions to patient care by fulfilling a safety check role, was recognized by both groups; but perhaps more emphatically by the pharmacy students. Nevertheless there was an undertone that questioning a physician's authority is difficult for a pharmacist. There was some questioning of the power imbalance, particularly in relation to prescribing; where the superiority of physicians was seen as inappropriate when medicine students' detailed knowledge is seen as inadequate for the task. This is seen as a

mismatch of capabilities and responsibilities, since pharmacists do not have the right to prescribe; yet their knowledge of medications is better than the medical practitioners. Although understandable this attitude is somewhat incongruent with the poor uptake of increased responsibility that has been available to pharmacists in recent years, including limited prescribing rights (Chan et al. 2008, Roberts et al. 2005, Rosenthal, Austin and Tsuyuki 2010). Nevertheless, the prescribing role is a major component of the power gradient between the professions, with the medical prescriber perceived as having the greater responsibility and the pharmacist role as supporting the prescriber.

Knowledge appears highly valued by these undergraduate students and used as a measure of professional worth. This is evident in the medical student reflections, which praised the pharmacy students as "medication experts"; but can also be appreciated, in the derogatory comments about pharmacy students' lack of knowledge. Pharmacy students themselves also cited inadequate knowledge as a reason for their lack of confidence to contribute meaningfully to learning with, about and from other professional groups. When medical students mentioned learning from another professional group, this was described in terms akin to a "taking of knowledge". They expressed the intention to utilize (as distinct from work collaboratively with) pharmacists to bridge gaps in their knowledge. Overall, this study lends support to the notion that knowledge is seen and treated as a commodity by undergraduate healthcare students as something to be taken or utilized, rather than something to be jointly developed.

Overall, this study illustrates that there are a number of issues associated with undergraduate students learning "with, from and about" each other. These seem to reflect traditional power differences and professional hierarchies between the professions, and can impede meaningful interprofessional learning. Whilst contact between professional groups can provide a platform for deeper learning, this is more likely to happen if students experience challenges their assumptions about other professions and their beliefs about the value around interprofessional interaction (Mezirow 1997). Learning from others can only occur if participants are open and willing to new perspectives (Hovey and Craig 2011). It requires the learners to co-construct and share new meanings, which does not occur in this study. Some authors have suggested that IP practice requires greater development of the self and may therefore be a longer-term proposition beyond licensure (Ward et al. 2017).

This lack of "learning from" does not fit with how we as educators, tend to conceptualize IPE. However, from a practical perspective it illustrates the complexity of ensuring the desired outcomes when we put students from different professions together (Kuper and Whitehead 2012). Learning with others, has enabled both groups to learn something about the other profession; and they perceive this as worthwhile. Perhaps two out of three is sufficient, since learning with and (a little) about is enough to enable professionals to work together. The literature may be wrong about how we conceptualize IPE. D'Amour and colleagues have stated that in order to collaborate one must be familiar with the other professions' roles, responsibilities and conceptual models.(D'Amour and Oandasan 2005) Whilst the end goal of collaborative practice is certainly valid, achieving the requisite familiarity with another professional group could be seen as a necessary first stage (Charles et al. 2010).

This study provides in depth insight into how undergraduate healthcare students perceive learning with students from another health profession. However, there are limitations to this study, including that it relies on self-reported data from students within one academic institution in Australia obtained at only one time point and social desirability response bias (Fisher 2000). While the insider position of the first author intimately shaped the research approach and interpretations, the co-authors who were outsiders provided a useful counterbalance in interpreting the findings.

Conclusion

Learning from another professional group requires greater openness to co-construct and share new meanings and was not achieved in this IPE setting. Learning with another professional group is seen as positive by learners; and enables an understanding of roles and responsibilities in patient care. Some learning about another profession occurs in IPE and this small shift in attitudes will likely have benefits for future practice. It may provide the foundations for building collaborative practice at a later stage. However, it is unlikely this will be sufficient on its own to result in the significant advancement of a more collaborative model of practice, in the context of wider influences and set patterns of professional roles and relationships. To provide learners with the understandings that can form the basis for collaborative practice, we need to challenge their fundamental assumptions, beliefs and values around other professions and interprofessional interaction.

Take Home Messages

1. Students in the health professions value learning *with* and *about* each other.
2. In order to learn *from* one another, students need to be willing to engage in co-constructing and sharing new meanings.
3. Professional hierarchies and power differentials can impede meaningful interprofessional learning

Notes On Contributors

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Appendices

Declaration of Interest

The author has declared that there are no conflicts of interest.

Presentations During Candidature
International Clinical Skills Conference

20-minute oral presentation, International Clinical Skills Conference, Prato 2015

ABSTRACT

Interprofessional learning that makes sense

Dr. Josephine S. Thomas, Dr. Michael Wiese

Introduction

Medicine at the University of Adelaide is a 6-year undergraduate program. Pharmacy students at the University of South Australia complete a 4-year undergraduate program. Both groups of students commence learning practical therapeutics during their clinical attachments (Medicine in Year 4 and Pharmacy in Year 3).

Aims

To evaluate perceptions of an inter-professional workshop to develop prescribing and medication counselling skills of students.

Methods

Year 4 Medical Students undertaking their Medical unit attachment and Year 3 Pharmacy students were scheduled to attend a 1-hour workshop session. The session involved inter-professional groups of 2-3 students completing tasks relating to a case scenario. Tasks included: prescribing for the case; determining doses; predicting adverse effects and role-play of consultations.

Following the session students were asked to rate the session in terms of learning value, enjoyment, benefits of an inter-professional group and appropriateness for their stage of learning.

Results

Participation in the activities was good. Students rated the sessions very highly in terms of learning value and enjoyment. Most considered the sessions relevant appropriate for their stage in learning. They valued the interactive and practical nature of the sessions. In particular students commented on the benefits of interacting with students from another discipline and how their skills were complementary.

Conclusion

The inter-professional workshop format was highly valued as a learning opportunity by both medical and pharmacy students. The pairing of clinical students from different professional groups at a similar stage of learning was key to the success of this format. Feedback from students will be used to further refine and develop inter-professional learning in both programs.

South Australian Association of Internal Medicine, Annual Meeting

Invited 20-minute oral presentation at the biannual meeting of the association
(SAAIM: General Internal Medicine interest group with Interprofessional membership),
Adelaide, 2015.

Interprofessional learning

Jo Thomas

1

What is it?

“Interprofessional education occurs when students from two or more professions learn about, from and with each other to enable effective collaboration and improve health outcomes” (WHO 2009).

2

It is NOT

Sitting in the same classroom for some lectures

3

Is it?

On the job learning?
Yes but....
Authentic vs manufactured experience

4

- Probably need to start early to build good habits
- We are training health professionals to engage in a complex system- waiting until they graduate is not really timely enough
- Benefits to a longitudinal approach and exposure

5

Here's the sweet spot

- IPL should be authentic- real clinical dilemmas
- But early enough to allow enough learning about other disciplines and impact on behaviours
- Provide some framework and be explicit (signposting)
- Shared tasks- case based, focus on respectful and meaningful communication
- High quality material
- Timetabling is important – different courses involved, cannot impose unreasonable workload at awkward times.
- Role modelling of collaboration by educators

6

Why do we need it?

- Teamwork capabilities
- Producing graduates capable of collaboration
- Patient centred care of higher quality

Because medical students feel superior to other team members

7

Don't believe me?

- *"IPL is not a good use of our time- we focus on different aspects of care to other health professionals"*
- *"The other discipline needs to be at a higher level of learning compared to us in order for us to benefit "*

Good role models may be hard to find
"hidden curriculum"

8

What are we doing?

Not much

9

Pockets of excellence

- I have added sessions where allied health explain their skills and roles to senior MBBS students- I have utilised the talents of my close allied health colleagues from AMU
- Team teaching in intern training- excellent session with social worker
- Role modelling (good) and I like to be explicit about that as well (signposting)
- Recently University of Adelaide added a number of simulation classes involving both undergraduate nursing and medicine students

10

My latest project

A three-way collaboration :

- University of Adelaide **medical** students
- University of South Australia **pharmacy** students
- Flinders University supervisors

11

LEVEL of learning

Year 3 Pharmacy and Year 4 Medicine students

- Students in each course are at the beginning of clinical placements- they are both beginning to APPLY knowledge of pharmacotherapeutics, and have a complementary skillset in this regard.

12

Workshop format

- 2 sessions for each medical student, 4 for pharmacy students
- Case based and slightly challenging- involve role play and shared decisions on treatment.
- Discussion and debate required to choose from multiple options
- **Authentic** clinical dilemmas and therapeutic choices- atrial fibrillation, anticoagulation, choosing drugs for gout with comorbidities, heart failure.
- Tasks are best solved by utilising skillset of BOTH disciplines.

13

Further learning

- Reflective writing piece

14

Champions

- Educators from both disciplines team-teach, demonstrate collaborative behaviour.
- One and a half hours- long enough for discussion and social interaction
- Shared resources- online and textbook

15

Aims

- To **demonstrate** to faculty that IPL is a necessary and important part of curriculum for MBBS and Pharmacy and can be implemented to suit our needs.

16

Evaluation

- Mixed methods research
- Quantitative – RIPLS questionnaire (readiness for interprofessional learning) pre and post workshop
- Qualitative- themes from reflective writing and free text on surveys PLUS focus groups

17

Theoretical framework

- “It is essential that educationalists and researchers underpin their practice with sound theoretical frameworks, first to improve the quality of their curriculum development and evaluative practice but also as a means of explaining the curriculum and evaluation to sceptics.” Hean 2009

18

Theoretical framework

- Systems perspective
- Transformative learning – Mezirow
- Social identity theory

19




20

Interprofessional Workshop for Academic Staff, University of Adelaide

Invited oral presentation. University of Adelaide, Faculty of Health and Medical Sciences, Interprofessional workshop for Academic staff, 2016.

Interprofessional learning that makes sense

Jo Thomas



1

A three-way collaboration :

- * University of Adelaide **medical** students
- * University of South Australia **pharmacy** students
- * Flinders University higher degree **supervisors**



2

Why do we need IPL?

- * Teamwork capabilities
- * Producing graduates capable of collaboration
- * Patient centred care of higher quality

Because medical students feel they need to lead other team members

Because pharmacists feel unable to challenge doctors...



3

When is it?


- * If we accept that graduates need to be ready at commencement of work
- * On the job learning would obviously not be timely enough
- * Benefits to a longitudinal approach and exposure to embed practice and deepen understanding
- * The challenge is to provide an experience that is reasonably authentic (vs. manufactured)



4

What works?


- * IPL should be **authentic**- case-based, real clinical dilemmas
- * But **early** enough to allow enough learning about other disciplines and impact on behaviours
- * Provide some **framework** and be explicit (signposting)
- * **Shared** tasks- focus on respectful and meaningful communication
- * High **quality** material
- * **Timetabling** is important – different courses involved, cannot impose unreasonable workload at awkward times.
- * Role **modelling** of collaboration by educators



5

Educational intervention


- * Designed with IPL and adult learning principles and using results from a 2014 pilot
- * **Small groups** -2 medical and 2 pharmacy students
- * 2 x 1.5-hour workshops
- * Case based, series of tasks in the small group
- * Students in each course are at the **beginning** of clinical placements, starting to **APPLY** knowledge of pharmacotherapeutics, and have a complementary skillset in this regard.



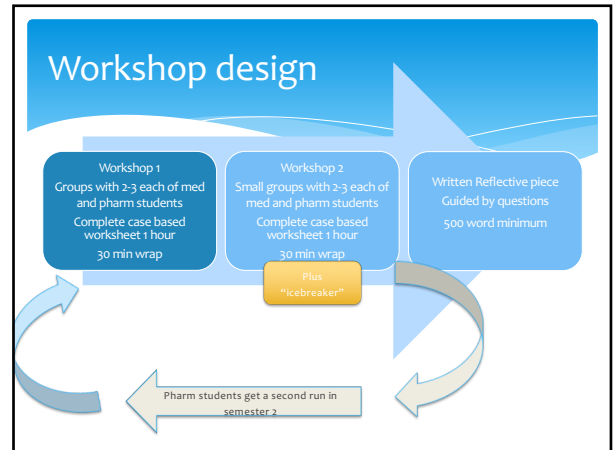
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Educational intervention

- * **Case-based** and slightly challenging- involves role play and shared decisions on treatment.
- * Discussion and debate required to choose from multiple options
- * **Authentic** clinical dilemmas and therapeutic choices- atrial fibrillation, anticoagulation, choosing drugs for gout with comorbidities, heart failure.
- * Tasks are best solved by utilising skillset of BOTH disciplines.




7



8

Evaluation


- * Mixed methods research
- * Quantitative – RIPLS questionnaire (readiness for interprofessional learning) pre and post workshop
- * Qualitative- content and themes from reflective writing and free text on surveys and follow-up interviews are planned
- * Intergroup contact theory and transformative learning provide theoretical lenses to examine the impact of interprofessional workshop sessions.



9

Why it makes sense

- * Educators who already collaborate well = good role modelling
- * A topic common to both programs = synergy
- * At commencement of clinical practice = relevant, right level
- * Case- based, real clinical dilemmas = authentic, valuable, familiar format
- * Based on future interactions between the 2 disciplines = authentic, basis for longitudinal learning



10

Results so far

Acceptability of contact

- * Comfort with the format of the workshops was a common theme
- * Familiarity -prior social contact; personal experience with healthcare and clinical experience. Shared values and goals
- * Poor team behaviours from medical students : not collaborative, dismissive, arrogant, failure to listen to others' views
- * Unequal numbers (less pharmacy)- threatening for pharm, unsatisfactory for med



11

Results so far

Professional roles


- * Doctor as leader, medical expert, decision maker and ultimate responsibility for the patient.
- * Pharmacists' role as providing a second checking step in the prescribing process, acting as a **safety net** for doctors- appreciated by both groups (more apparent for pharmacy)
- * Pharmacist (and other allied health professionals) providing a different and complementary perspective on the patient's care



12

Results so far

- * The students draw linkages to **clinical experience**
- * **Professional role** seems to be clarified and strengthened when reflecting on contact with another professional group
- * Greater **confidence in team role** and capacity for pharmacist to challenge doctor following the workshops
- * Perceptions of power and lack of equal status between the professions seems to be an important factor in the interaction




13

RIPLS data

Significant differences between medicine and pharmacy pre-workshops

- * More med students answer affirmatively:
 - * I'm not sure what my professional role will be
 - * I have to acquire much more knowledge and skills than other health care students
 - * it is not necessary for undergraduate health care students to learn together
- * More med students answer negatively
 - * I would welcome the opportunity to work on small-group projects with other health care students


Significant shift in **professional identity subscale** for medical students post-workshop. The difference is largely due to the significant difference in the scores for the question "I am not sure what my professional role will be"



14

Summary

- * IPL is hard work but rewarding
- * It is acceptable to students
- * Has relevance to their clinical experience
- * can be used in the delivery of common learning objectives
- * Helps them to understand other team roles

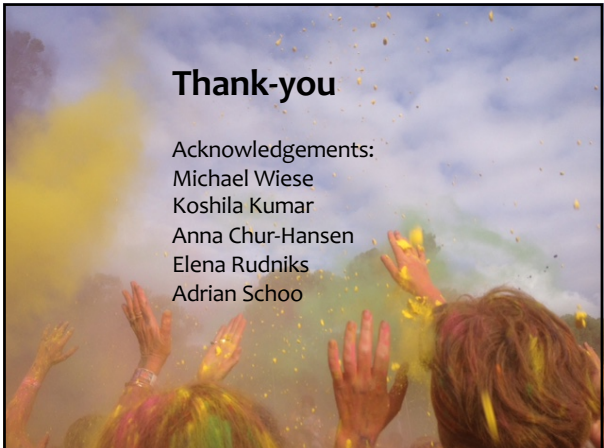


15

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- Anna Chur-Hansen
- Elena Rudniks
- Adrian Schoo



16

What is it?

"Interprofessional education occurs when students from two or more professions learn about, from and with each other to enable effective collaboration and improve health outcomes" (WHO 2009).



17

Prideaux Centre Research Forum, Flinders University

20-minute oral presentation to PhD candidates, Masters candidates and supervisors.

Prideaux Centre Research Forum, Flinders University, SA. February 2016.

Interprofessional learning between medicine and pharmacy students: what is the impact on students' attitudes and perception of professional identity and role

Dr. Josephine Thomas, RHD candidate, Faculty of Medicine, Nursing and Health Sciences (Senior Lecturer, School of Medicine, University of Adelaide).
 SUPERVISORS:
 Dr. Koshila Kumar, Flinders University Rural Clinical School (FURCS)
 Prof. Adrian Schoo, FURCS
 Dr. Elena Rudnik, FURCS
 Prof. Anna Chur-Hansen, University of Adelaide

1

Introduction

- Formation of professional identity and an understanding of their role within the team is a crucial element of healthcare students' development.
- This research set out to explore whether IP learning can make a positive contribution.
- The impact of deliberate exposure provided through structured IPL sessions as well as less-controlled clinical exposure to elements of the "hidden curriculum" are considered.

2

Contact theory

- Often referred to as the "contact hypothesis" was first described by Allport in 1954
- Interpersonal contact with another group can reduce prejudice.
- Beneficial factors (which may enhance the benefits of intergroup contact) include:
 - Equal group status within the contact situation
 - Co-operation between groups
 - Common goals
 - Authority support –ie. from institutions and social authorities

3

Research questions

- How is a student's emerging professional identity and perception of their role within a healthcare team impacted by interprofessional learning?
- How do students' attitudes towards interprofessional learning change after exposure to interprofessional workshops?

4

Methods

Setting

- Medicine at the University of Adelaide is a 6-year undergraduate program (MBBS). Pharmacy students at the University of South Australia complete a 4-year undergraduate program (B.Pharm).
- Practical therapeutics commences during clinical attachments.
 - MBBS students this is in Year 4 (of a 6 year program)
 - B.Pharm students, in Year 3 (of a 4 year program).

The Researcher

- Staff member- MBBS program, at University of Adelaide
- Practicing Clinician, Member of the interprofessional Pharmacology group
- Responsible for development of the educational intervention as well as the evaluation.
- Familiar with students stage of learning and development, in terms of knowledge, clinical experience and professional identity.

5

Participants

- | | |
|--|---|
| • MBBS- year 4 | • B.Pharm- year 3 |
| • (198 students) | • (114 students) |
| • Undergraduates | • Undergraduates |
| • Predominantly school leavers | • School leavers/ tertiary transfers |
| • Mean age = 21.6 yo (range 20-44, SD = 2.13) | • Mean age = 21.9 yo (range 19-32, SD = 2.25) |
| • 45% female | • 64.7% female |

6

Workshop design

Interprofessional learning session format
 Pre-reading- revise prior learning, online modules

Workshop 1
 2-3 medicine and 2-3 pharmacy students (self selected)
 1.5 hours small group activity
 Worksheet comprising case based scenario and shared tasks
 Some different tasks assigned to each profession
 Common resource (Australian Medicines Handbook)
 0.5 hour wrap session

Workshop 2
 2-3 medicine and 2-3 pharmacy students (self selected)
 1.5 hours small group activity
 4000TOMAS task of discussing the nature of each profession's course
 Worksheet comprising case based scenario and shared tasks
 Some different tasks assigned to each profession
 Common resource (Australian Medicines Handbook)
 0.5 hour wrap session

Reflective writing task
 500 words completed after the second workshop
 Questions to guide reflection on IPL

7

Data Collection

A mixed methods approach was using concurrent qualitative and quantitative methods of data collection:

- The students' reflective writing was the main **qualitative data** used to evaluate the impact of the interprofessional learning sessions.
- RIPLS was chosen as a **quantitative tool** to examine students' readiness for IPL, students were invited to complete the RIPLS questionnaire, before and after attending the workshops.

8

Data analysis methods

Qualitative data

- Thematic analysis of reflective pieces, using an inductive coding approach
- Reflective pieces from both medicine and pharmacy individual pieces coded until saturation
- Other team members sampled raw data- added rigour to coding process

Quantitative data

- **Mean scores were** compared between pharmacy and medicine groups using t-tests.
- Positive responses were combined to provide **dichotomized data** (2-sided Fishers exact test)
- Paired responses from the pre- and post-surveys for medicine students were compared (paired t-test, dichotomised data and McNemar's chi²)

9

Results

	Medicine	Pharmacy
RIPLS		
pre-workshop survey	69/199 (35%)	58/114 (51%)
post-workshop survey	41	22
matched paired data	21	9
Qualitative data		
Reflective pieces	19	19
female	58%	76%
age	mean = 21.3 yo (range 20-24)(SD= 1.12)	Mean= 21.8 yo (range 19-32)(SD=2.97)

10

Qualitative results

Codes clustered under four main themes:

- Acceptability of contact
- Professional roles
- Future intentions
- Knowledge

11

Results

Acceptability of contact

- Comfort with the format of the workshops was a common subtheme
- Familiarity -prior social contact; personal experience with healthcare and clinical experience. Shared values and goals
- Poor team behaviours from medical students : not collaborative, dismissive, arrogant, failure to listen to others' views
- Unequal numbers (less pharmacy)

12

Results

Professional roles

- Doctor as leader, medical expert, decision maker and ultimate responsibility for the patient.
- Pharmacists' role as providing a second checking step in the prescribing process, acting as a **safety net** for doctors.
- Pharmacist (and other allied health professionals) providing a different and complementary perspective on the patient's care
- Greater confidence in team role and capacity for pharmacist to challenge doctor

13

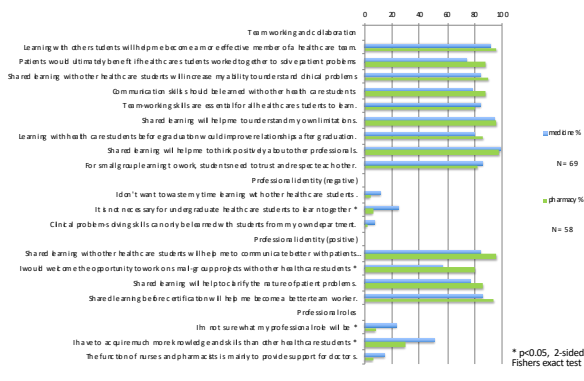
Results – pre-workshop RIPLS

PRE WORKSHOP SURVEY	Pharmacy	SD	Medicine	SD	difference between groups	t-test (p-value)
n= RIPLS respondents/total cohort	58/114		69/198			
SUBSCALES	mean scores	SD	mean scores	SD		
Team working and collaboration	38.36	4.34	36.04	2.59	2.32	0.0003
Professional identity (negative)*	12.17	1.85	10.94	1.7	1.23	0.0002
Professional identity (positive)	16.79	2.22	15.06	1.7	1.74	0.0000
Professional roles	7.79	1.76	8.65	1.59	0.9	0.0046
TOTAL SCORE	75.12	7.61	70.7	5.04	4.43	0.0001

* reverse scored

14

Dichotomised pre-workshop RIPLS responses



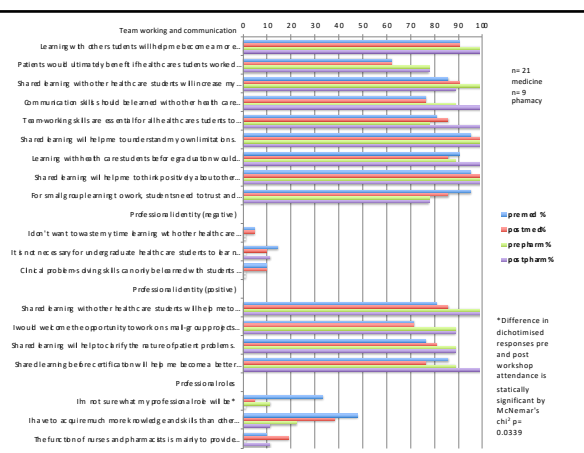
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Paired responses medicine n=21

PAIRED responses pre- and post-workshops for Medicine Students (n=21)	Mean scores pre workshop	SD	Mean scores post workshop	SD	differences bw pre and post	paired t-test p-value
SUBSCALES						
Team working and collaboration	35.86	2.15	36.14	2.48	0.29	0.5356
Professional identity (negative)*	11.14	1.56	11.29	1.95	0.14	0.6336
Professional identity (positive)	15.29	1.62	15.38	1.69	0.1	0.8313
Professional roles	8.76	1.41	7.9	1.58	0.86	0.0275
TOTAL SCORE	71.05	4.51	70.71	5.1	0.33	0.7748

* reverse scored

16



17

Discussion- professional roles

- The role of pharmacist as medication expert and safety check is appreciated by both groups (more apparent for pharmacy)-contact theory
- The students draw linkages to clinical experience in reflection
- Professional role seems to be clarified and strengthened by reflecting on contact with another professional group
- Small shift in attitude for medicine students in the "professional roles" subscale
 - The difference largely due to the significant difference in the scores for the question "I am not sure what my professional role will be"

18

Discussion

- Differing attitudes to IPL between the two groups
 - RIPLS subscales differences and dichotomised data
 - Medicine “need to lead” in IPL and clinical setting
 - Learning could be done without other students
- Poor team behaviour described in medicine group
 - RIPLS data = lower score
 - Some of the Medicine group are seen as poor team players, notably worse in semester 2
 - Possible influence of the clinical experience and whether this is creating more negative views toward IPL and team behaviour (hidden curriculum)- contact theory

19

Implications

- Based on these results:
 - More sessions or longitudinal exposure may be required, to deepen understanding
 - Contact between students of different professions needs to occur in multiple settings (can we ensure more/better clinical opportunities)
 - How can we facilitate positive perceptions about emerging professional role and identity (equal group status conditions)

20

Conclusion

- Reflection on a **formal IPL activity** is an opportunity for students to consider their own professional role and how this relates to the professional roles of others in the healthcare team.
- It may prompt them to draw on their clinical experience and wider social experience.
- This may create a positive view of the value of other professional roles, but this is not necessarily the case.
- Care and monitoring is needed in the design of formal IPL to ensure that it meets intended objectives

21

Key points for feedback

- How does the chosen theoretical lens help frame the study?
- How do these findings resonate with the audience experience of IPL more broadly?
- What would this research need to become a PhD?
 - Further data from in-depth interviews/focus groups
 - Triangulation of data with other stakeholders
 - A further action cycle

22

References

- Pettigrew TF, Tropp LR, Wagner U, Christ O. Recent advances in intergroup contact theory. *International Journal of Intercultural Relations*. 2011;35(3):271-80.
- Tausch N, Hewstone M. Intergroup contact. In: Dovidio JF, Hewstone M, Glick P, Esses VM, editors. *The SAGE handbook of Prejudice Stereotyping and Discrimination*. London: SAGE publications; 2013. p544-560
- Pettigrew T.F. Intergroup Contact Theory. *Annual Review of Psychology*;1998.49;65-85

23

Rogano Meeting

Invited oral presentation of thesis research plan, with 20 minutes of questioning by experienced researchers and higher degree supervisors, International Rogano meeting, Barcelona, 2016.

Interprofessional learning between medicine and pharmacy students: what is the impact on professional identity?

Josephine Thomas
Prideaux Research Centre
Flinders University, SA.

SUPERVISORS
Dr. Koshila Kumar
Prof. Adrian Schoo
Dr. Elena Rudnik
Prof. Anna Chur-Hansen





1

What we know
The formation of professional identity and role-clarity is a crucial element of healthcare students' development.

What we don't know
Interprofessional learning (IPL) may make a positive contribution to the development of **professional identity and role-clarity**. Deliberate exposure provided through structured IPL sessions will be accompanied by less-controlled clinical exposure of the "hidden curriculum"
Students are likely to draw on their wider social experience and knowledge of other professions

2

Definitions

- Formal Interprofessional learning (IPL)
 - 2 or more professional groups learning with, from and about each other; in a deliberate learning activity
- Professional identity
 - *"to think, act and feel like a health professional"*
 - How they view their own contribution to the care of the patient, in the context of the healthcare team

3

Research questions

- How is a student's emerging professional identity and perception of their role within a healthcare team impacted by interprofessional learning?
- How can educational workshops produce transformative learning about interprofessional interactions (including social interactions)?
- How do students' attitudes towards interprofessional learning change after exposure to interprofessional workshops?

4

Research plans

Action research principles
Positioning myself as a researcher
Development of an IPL intervention for undergraduate **pharmacy** and **medical** students.

- Small group IPL workshop activity
- Authentic cases
- Utilizes skillsets of both groups

5

Theoretical perspectives	Theoretical proposition
Intergroup contact theory and Social Identity theory	Students gain role clarity from contact with another professional group
Have been useful in the design of the workshops and in understanding the observations to date.	Formal IPL allows students to draw linkages to wider experiences on reflection, and facilitates professional identity development

6

Data collection and analysis methods

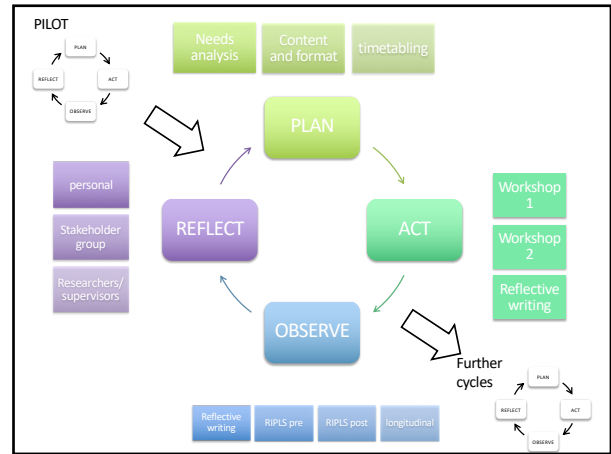
Quantitative

- "Readiness for interprofessional learning questionnaire" (RIPLS)
- Surveys conducted pre and post workshops
- Comparison bw medicine and pharmacy and bw pre and post responses

Qualitative

- Thematic analysis of students' guided reflective-writing (focussing on the experience of the IPL workshops)
- Inductive coding, sampling by multiple researchers
- Longitudinal follow up with in-depth student interviews

7



8

Results so far

- In the pre-workshop RIPLS survey pharmacy students had higher scores than medicine students in every RIPLS subscale
- A small shift in scores pre- and post- workshop attendance is evident (and statistically significant) for medicine students in the "professional roles" subscale
- Professional role appears to be clarified and strengthened by reflecting on contact with another professional group
- The students draw linkages to clinical experience in reflection
- Poor team behaviour in medicine group (effect of hidden curriculum)

9

Discussion

1. How do these theoretical frameworks offer a view of the development of professional identity in the context of formal IPL sessions
2. The next phase of data collection– how will this address the research questions
3. How does the hidden curriculum undermine what we are trying to achieve in the formal IPL sessions

10

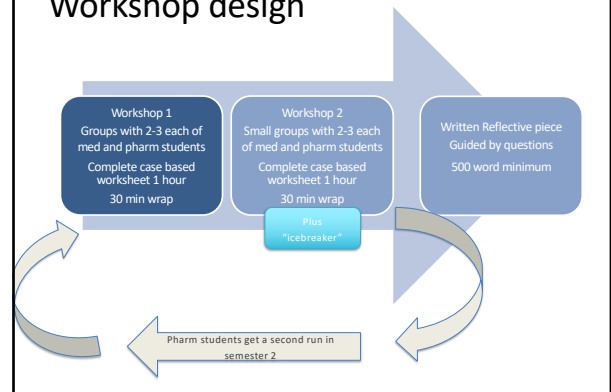
Thank-you

Acknowledgements:
 Prideaux Centre
 Supervisors
 A/Prof Michael Wiese

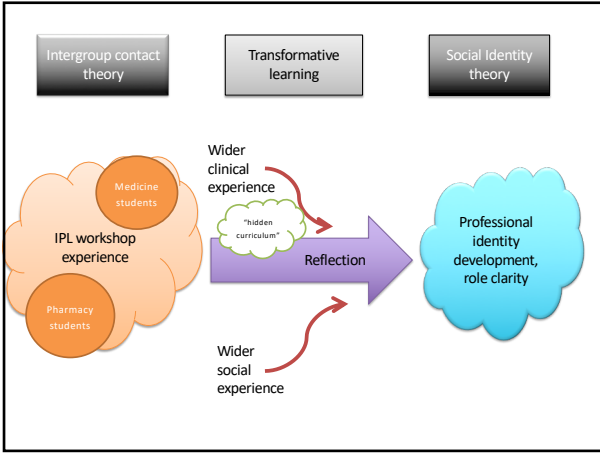


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Workshop design



12




South Australian Association of Internal Medicine, Annual Meeting

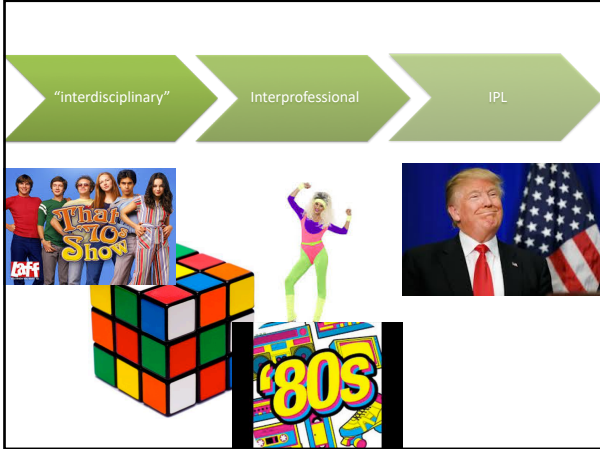
A 60-minute invited facilitation of an interactive workshop session. (SAAIM: General Internal Medicine interest group with Interprofessional membership), Annual Meeting, Adelaide 2017.

Interprofessional learning

With,
From,
and about
each other



1



2

CAIPE, 2011, <http://caipe.org.uk>

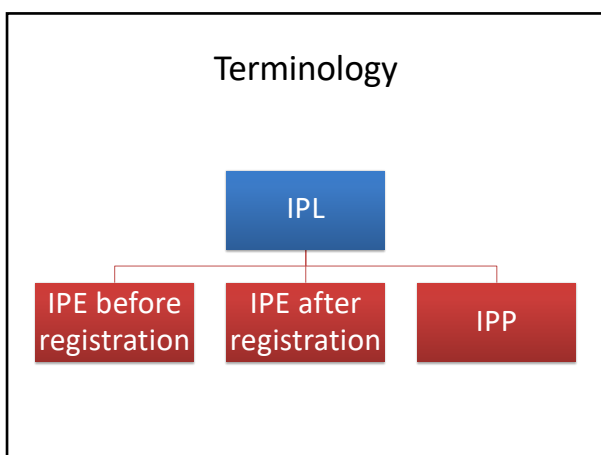
'IPE occurs when two or more professions learn with, from and about each other to improve collaboration and the quality of care ... and includes all such learning in academic and work-based settings before and after qualification, adopting an inclusive view of "professional".'

3

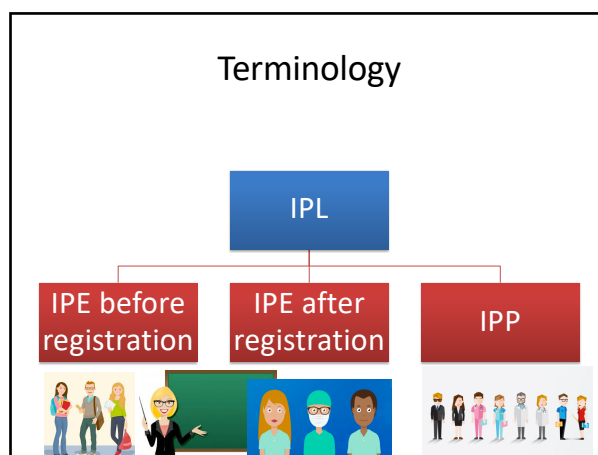
CAIPE, 2011, <http://caipe.org.uk>

'IPE occurs when two or more professions learn with, from and about each other to improve collaboration and the quality of care ... and includes all such learning in academic and work-based settings before and after qualification, adopting an inclusive view of "professional".'

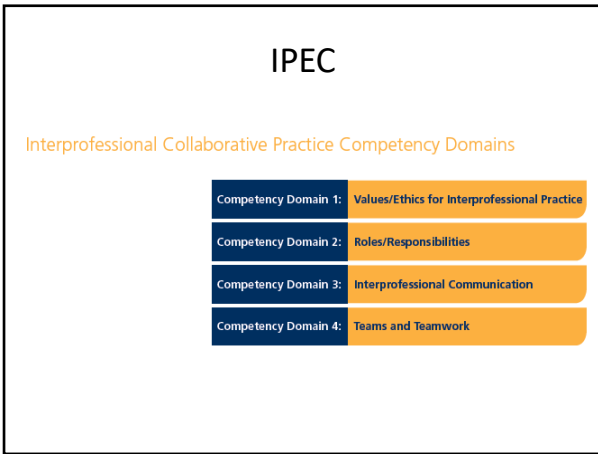
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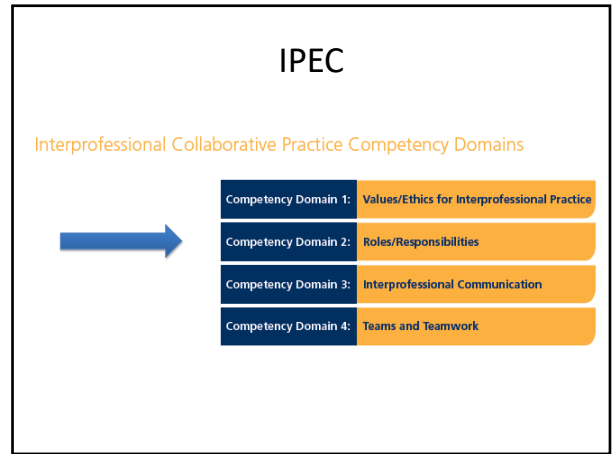
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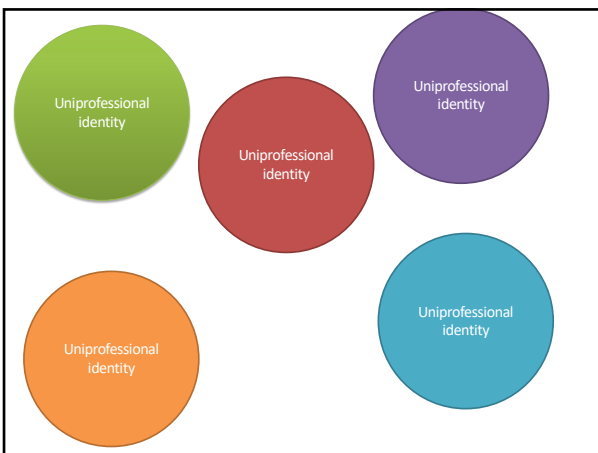
- #### IPEC Competency Domain: Role Clarity and Responsibility
- **RR1.** Communicate one's roles and responsibilities clearly to patients, families, and other professionals.
 - **RR2.** Recognize one's limitations in skills, knowledge, and abilities.
 - **RR3.** Engage diverse healthcare professionals who complement one's own professional expertise, as well as associated resources, to develop strategies to meet specific patient care needs.
 - **RR4.** Explain the roles and responsibilities of other care providers and how the team works together to provide care.
 - **RR5.** Use the full scope of knowledge, skills, and abilities
- <http://www.aacn.nche.edu/education-resources/ipcreport.pdf>

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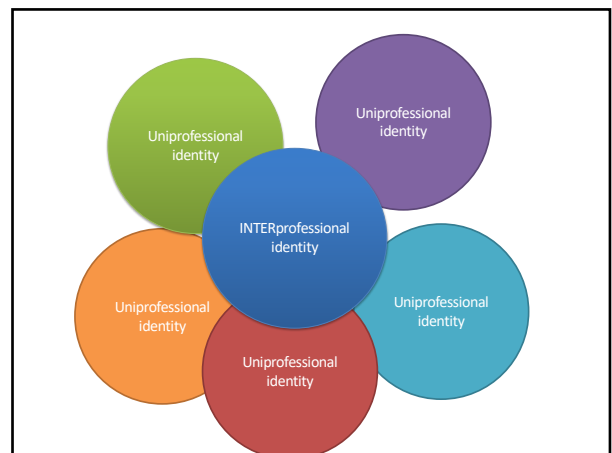
Role clarity leads to better utilization of individual health care workers, improved communication, reduced error, and enhanced delivery of patient care.

(Meuser et al., 2006)

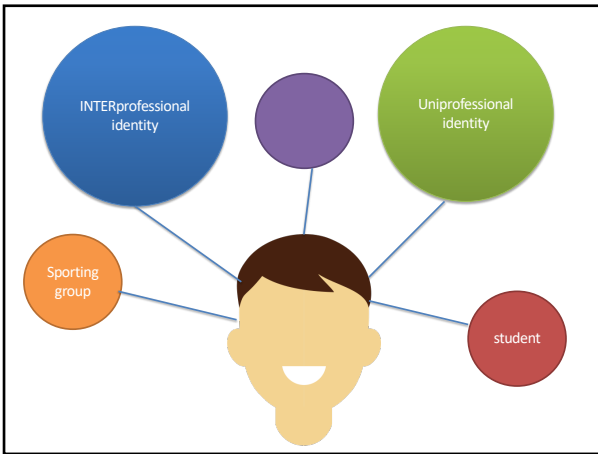
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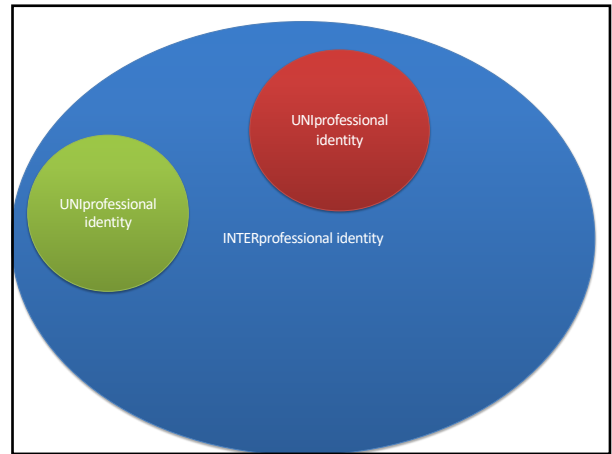
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14

Let's play!

Interprofessional
pictionary

15

ACTIVITY in groups of 6-8 at tables

- DON'T TELL OTHER TABLES what you have been allocated
- Your task.....
 - Draw a representation of the health professional you have been allocated
 - Without use of letters or numbers reg RN or Rx
- You each have a set of questions to help you
- At the end the other teams should guess the profession prior to discussion

16

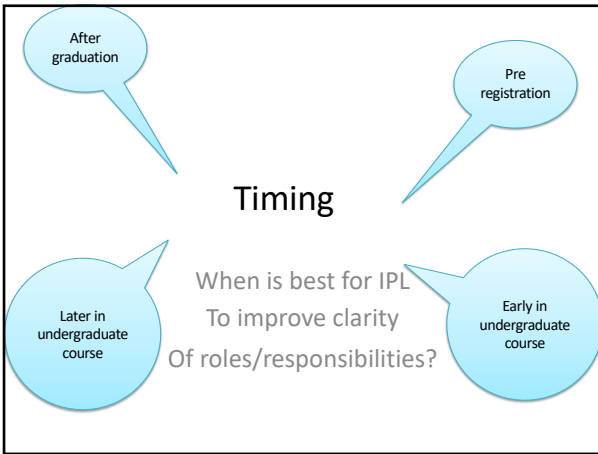
ACTIVITY in groups of 6-8 at tables

- How would you describe the profession?
- What do people with this profession do?
- Who do they work with (patients and other staff)?
- What education do people with this profession need to complete?
- Where do people with this profession work?

17

Time to share your work

18



19

Post registration

- Some authors suggest that IPE may be more relevant and meaningful to post-registration learners than to undergraduate learners (Freeth 2014).

20

Pre-registration ?

- IPE is often seen as positive, but there are a number of barriers, including:
- Timetabling
- Different requirements from professional bodies
- Universities not necessarily providing programmes for all the professions
- Different entry requirements and lengths of programme.

Finch (2000)

21

Contributions to unequal status bw professional groups:

- Differences in history and culture
- Historical intraprofessional and interprofessional rivalries
- Differences in language and jargon
- Differences in schedules and professional routines
- Varying levels of preparation, qualifications and status
- Differences in requirements, regulations and norms of professional education
- Fears of diluted (uni)professional identity
- Differences in accountability, payment and rewards
- Concerns regarding clinical responsibility.

22

My research

- IPE is viewed positively by students
- In both qualitative and quantitative data professional role seems to be clarified and strengthened by reflecting on contact with another professional group
 - Themes: Pharmacist as safety net/double check; Doctor as team leader
- Power gradient is evident
 - Some poor team behaviours from medicine
 - Subordinate role of pharmacy

23

My research

- Some aspects of professional identity appear to be firmly set by the mid point of undergraduate training.
- Students draw linkages to clinical experience
- Although how a formal IP curriculum interacts with the hidden curriculum of the clinical environment is uncertain.

24

Educators should consider

- the influence of students' clinical experience, via the hidden curriculum in determining the optimal timing and impact of IPE.
- The status between groups is important when "engineering" contact through IPE- including previous educational methods, where and how IPE is provided

25

An interprofessional education course

26

Go early, go often.....
go interprofessional.



27

Acknowledgements

- Dr Koshila Kumar
- Prof Adrian Schoo
- Prof AnaChurhansen
- Dr Elena Rudnik
- A/Prof Michael Wiese

28



29

ANZAHPE conference: Naming Interprofessional learning

“PeArl” 45-minute interactive session at the Australian and New Zealand Association of Health Professions Educators (ANZAHPE) conference, Adelaide, 2017.

Naming interprofessional learning: the transition from ‘community teamwork’ to ‘interprofessional practice’, and the terminology in between.

Josephine Thomas¹, Adrian Schoo²

1. PhD candidate, Flinders University, SA. 2. Flinders University Rural Clinical School, SA.

Introduction/background:

The term ‘Interprofessional’ first appears in the literature in the 1980s, although the concept was present in the 1970s and earlier. Original terms for interprofessional learning (IPL) included ‘interdisciplinary’ or ‘team approach’. The need for interprofessional education (IPE) and practice (Auerbach et al. 2008) originated as a cost-effective model for provision of community health care; and endures as a mechanism of ensuring safety and quality in health care. Definitions and nomenclature have been variable, although greater consistency seems to be emerging.

Aim/objectives:

To discuss and clarify the nomenclature around interprofessional learning. We propose a model of an IPL continuum.

Discussion:

IPL has often been described as the umbrella term that encompasses both IPE and IPP. It may include deliberate learning in academic and clinical settings as well as spontaneous learning in the workplace. Thus, it covers the spectrum of lifelong learning in the interprofessional domain.


However, IPL can also be seen as a continuum, which includes the many forms of teaching and learning along with the application of skills and knowledge that, in turn, could inform teaching and learning and subsequent practice. We propose a model of an IPL continuum, which includes IPL, IPE and IPP and shows the interrelationship between them.

Issues/questions for exploration or ideas for discussion:

1. Does the model resonate with clinical educators?
2. Do we agree on the use of the terms IPL, IPE, IPP?
3. Are there any significant casualties in the transition to this nomenclature?

ANZAHPE Conference: “My Transition- Navigating the Journey from Clinician to Qualitative Researcher and All the Pit Stops in Between”

20-minute peer reviewed oral presentation at the Australian and New Zealand Association of Health Professions Educators (ANZAHPE) conference, Adelaide, 2017.



My transition

Navigating the journey from clinician to qualitative researcher and some pit stops in between

Josephine Thomas

1

Who am I?

- Clinician
 - Complex hospital-based medicine, IP teams, acute and chronic care.
- Educator
 - undergraduate medicine, post graduate specialty training, pharmacy.
- My interests:
 - General Internal Medicine
 - Clinical Pharmacology
 - Interprofessional learning

2

Educator (storyteller)

- My teaching style makes full use of narrative, which I use to engage, provide relevant examples and to encourage affective components to the learning.
- I was always passionate about the “soft skills” in medicine

3

(Reluctant) researcher

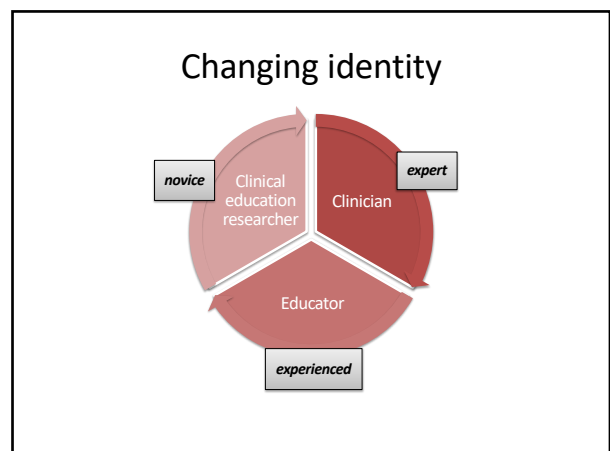
- From physics summer school, to undergraduate medicine, specialty training as a physician
- By the nature of my education and choice of courses, I was indoctrinated and invested in the positivist paradigm of quantitative research
- I have always loved to see data explain or solve a problem, and I love orators who can make the data tell a story
- I never fully made the leap to seeing myself as a researcher.....

4

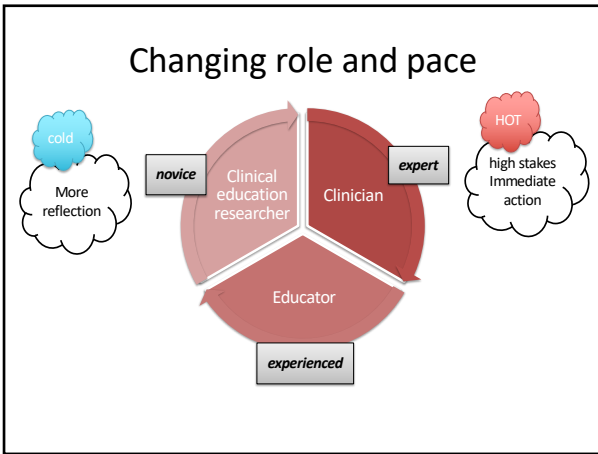
Qualitative researcher

- PhD in Clinical Education
- I found it useful to pursue course work as a “lead-in”
- I chose a topic that fit my interests
- Mixed methods were appropriate for the research

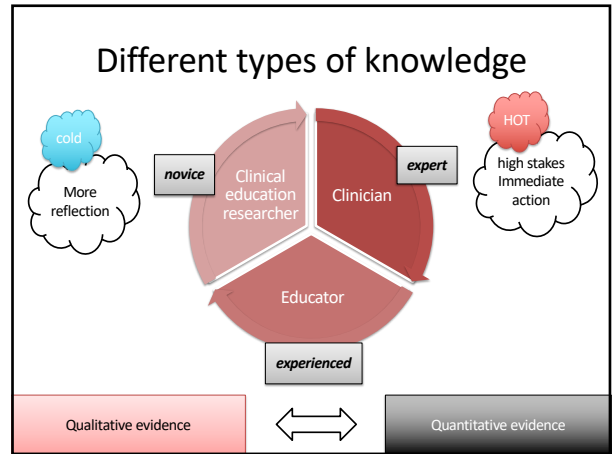
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6



7



8



Strategies for managing the transition:

- Discussion
- Reflection
- Literature
- Connection with others
 - Experienced
 - Learners

9

- ### For discussion
1. What supports or strategies are required to resolve clinician/researcher dissonance?
 2. Sharing experiences at forums like this and other meetings is one strategy
 3. Future strategies might include more exposure to qualitative research in the undergraduate curriculum; and providing faculty development in qualitative research.

10



Acknowledgements

- Dr Koshila Kumar
- Prof Anna Chur-Hansen
- A/Prof Michael Wiese
- Prof Adrian Schoo
- Elena Rudnik

11

ANZAHPE Conference: Sustaining Interprofessionalism, from Classroom to Workplace.

20-minute peer reviewed oral presentation at the Australian and New Zealand Association of Health Professions Educators (ANZAHPE) conference, Hobart, 2018.

Sustaining interprofessional, from classroom to workplace and beyond

Josephine Thomas
University of Adelaide



1

The clinical care environment

- The complexity of modern clinical care demands adaptability and collaboration, between disciplines and between professions .
 - Multi morbidity and complex therapeutic regimens
 - Evidence for better outcomes with team input e.g. stroke, obesity
 - Resource pressures and piecemeal funding
 - Constant change

2

Preparation for practice



3

Medical Education

- Rooted in traditional silos of specialty disciplines and the transfer of medical knowledge.
- Despite decades of effort, demarcations between professions remain more apparent than interprofessional collaborations.
- Interprofessional education vs hidden curriculum

4

A sustainable model

We need to create a sustainable model of education and training for the changing landscape of clinical practice.



5

Medical education reform

- Despite adoption of different models for learning, our openness to reform has been limited.
- Current enablers remain fragile and person dependent.
- The differences between medical programs and other health education programs are often highlighted

6

A sustainable model

- A sustainable model of education would be interprofessional and collaborative from undergraduate to postgraduate and beyond licensure.
- To flourish, this needs to be supported by collaborative interprofessional models of clinical practice.
- A seamless integration of the model across the continuum is needed.

7

Cultural shift

- we need to let go of knowledge acquisition as the main goal of education (This has advantages in the context of the current explosion of medical knowledge)
- Move to placing greater value on the co-creation of knowledge across professions
- Shift away from sub- specialty focus to holistic care
- dealing with uncertainty

8

With, About and From

- WITH- we must continue to provide opportunity for HPE students to come together, make it easier, until it becomes the norm.
- ABOUT- this should be easily achieved through coming together and supplemented by online content
- FROM.....

9

With, About and From

- WITH
- ABOUT
- FROM- co-creation opportunities:
 - a common language- from classroom to clinical setting
 - Clinical care – ward practice, patient records

10

Wish list

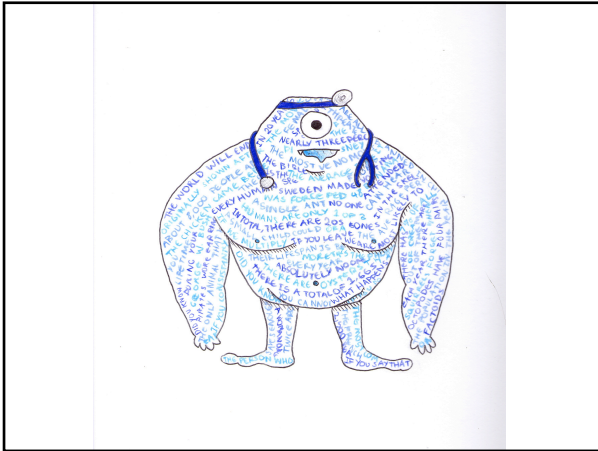
- Align Medicine with other HPE programs
- IPL embedded in both clinical and non-clinical education programs
- Co-creation of HPE programs
- Exposure to IP teachers and role models
- Weight assessments to reward co-creation
- Broaden scope to other professions eg law
- Continuum of education
- Change management education
- Emphasise education pathways

11

acknowledgements

- Toby Gilbert
- Campbell Thompson
- Anna Chur-Hansen
- Koshila Kumar

12



13

Questions for discussion

- Why has nothing changed after so many years of interprofessional endeavour and research?
- How do we move from interprofessional education as part of our delivery model to a truly interprofessional model of education and practice?

14

ANZAHPE Conference: Is it Really About From and With?

20-minute oral presentation at the Australian and New Zealand Association of Health Professions Educators (ANZAHPE) conference, Hobart, 2018.

Is it really *about, from and with*?

Josephine Thomas



1

Interprofessional Education

- Greater collaboration between pharmacy and medicine is linked to demonstrated improved patient outcomes
- Collaboration between these groups is a necessity in the face of complex therapeutic regimens
- Healthcare students from different professional backgrounds are often brought together under the banner of **Interprofessional Education (IPE)** in an effort to improve collaborative practice.

2

What we know

Demonstrated positive impact of IPE on students' knowledge, skills and attitudes:

- Attitudes to IP practice often improve after contact with another professional group
- Students rate IPE as a positive experience
- Students believe that IPE is worthwhile

HOWEVER, it is not clear what students think about learning with students from another health profession.

3

Study Aims

The aim of this study was to explore pharmacy and medicine students' views and experiences of learning together.

What and how do students think they learn with, from and about each other?

4

Methods

- Participants were Undergraduate Year 3 Pharmacy and Year 4 Medicine students, from two universities in Australia (predominantly school leaver entry)
- Qualitative data was gathered via a written reflection (participation voluntary)
- Data were de-identified and analyzed using a thematic analysis approach, as outlined by Braun and Clarke

5

Results

Three main themes were identified:

1. Students were accepting of learning **with** the other professional group.
2. Learning **about** was evident, particularly in relation to each other's roles and contributions to patient care.
3. Learning **from** another professional group was not as anticipated

6

with

- Generally comfortable, welcomed the opportunity to learn with a different professional group
- Enhanced their appreciation of how to communicate with the other group
- Both groups could see the value in learning together, because of the need to work together later.
- Many students drew links between better patient outcomes and the team approach to clinical practice.

“They were very nice people who had similar [sic] chosen a similar path to us medical students and so had similar priorities and values”(M15).

7

about

- The physician as leader was a common theme.
- The role of pharmacist was clearly articulated as a medication expert, this was a subordinate role to that of the physician

“As a pharmacist, realistically, we are to double check that what the doctor has prescribed and avoid potential errors. Unrealistically, we would take part in the prescribing decision to help decide the best pharmacological treatment, if needed, for the patient.”(P26).

8

from

Pharmacy saw their own knowledge deficits as an impediment to collaboration

Medicine intended to utilize ward pharmacists

“Any time that there is a pharmacist attached to the team I am on, I will ask lots of questions about drugs that I don’t understand, and medication regimes for different diseases.to broaden my knowledge “(M3).

9

Discussion

- Both groups of students were largely positive about IPE
- benefits to patients and benefits to their future practice
- students did not appear to value and invested little effort in co-constructing understandings and creating shared knowledge.
- Medical students assumed the role of leader as learner and as part of their professional role.
- Pharmacy students overwhelmingly adopted a subordinate role

10

Discussion

- Doctor as the dominant professional
- Pharmacist fulfilling a safety check role, was recognized by both groups
- An undertone that questioning a physician’s authority is difficult for a pharmacist.
- There was some questioning of the power imbalance particularly in relation to prescribing
- prescribing role is a major component of the power gradient between the professions

“it makes you realise how little doctors know about medicines and their specifics. It’s not their fault as its not really in their curriculum, but its scary when you consider they’re allowed to prescribe and we’re not” (P31).

11

Conclusion

While medicine and pharmacy students’ valued learning with and about each other, they were less likely to engage in co-constructing and sharing new meanings and thus learn from one another.

To provide a basis for meaningful collaborative practice, IPE needs to challenge students’ fundamental assumptions, beliefs and values about learning with, from and about other professions.

12

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With thanks:

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Elena Rudnik
Adrian Schoo

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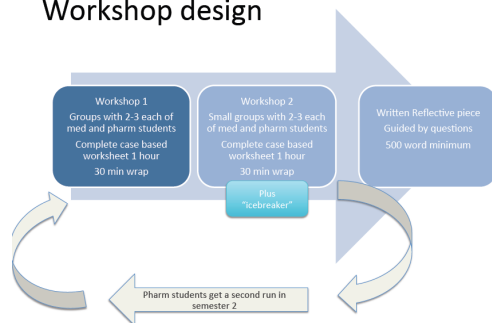
<https://www.mededpublish.org/manuscripts/1634/v1>

13



14

Workshop design



15

Reflective piece

Please answer the following questions in at least 500 words.

1. Were you uncomfortable working with students from another profession in the workshops? In what way?
2. Has learning with students from another healthcare profession helped you understand their role more clearly? How/how not?
3. How valuable is it to learn with students from another profession? Why/why not?
4. Were the other students at a different level of learning to you?
5. Can you define your professional role in a healthcare team?
6. How does the role of a pharmacist differ from that of a doctor?
7. What will you do differently following these workshops?

Questions can be categorized as targeting different types of reflection (Mezirow 1995)

Content: q4.

Process: q1.

Premise: q.s2,3,5,6,7.

16

Methods

Data were de-identified and analyzed using a thematic analysis approach, as outlined by Braun and Clarke:

- Familiarization
- Inductive coding
- Coding until saturation (19 medical and 19 pharmacy).
- Review of the first author's analysis
- Illustrative quotes from individual Codes were collapsed
- The codes were grouped into subthemes and themes linked explicitly to the research question

17



18

Research Documents and Tools

RIPLS questionnaire (modified for this study)

1. Generate a unique ID code

THE FOLLOWING QUESTIONS HAD A 5 POINT LIKERT SCALE OPTION:

2. Shared learning will help me to think positively about other professionals.
3. Clinical problem-solving skills can only be learned with students from my own department.
4. Shared learning before certification will help me become a better team worker.
5. Patients would ultimately benefit if health care students worked together to solve patient problems
6. I'm not sure what my professional role will be.
7. I would welcome the opportunity to work on small-group projects with other health care students.
8. Communication skills should be learned with other health care students.
9. I have to acquire much more knowledge and skills than other health care students.
10. Shared learning will help to clarify the nature of patient problems.
11. It is not necessary for undergraduate health care students to learn together.
12. Learning with other students will help me become a more effective member of a health care team.
13. The function of nurses and pharmacists is mainly to provide support for doctors.*
14. Shared learning with other health care students will increase my ability to understand clinical problems
15. Shared learning will help me to understand my own limitations.
16. For small group learning to work, students need to trust and respect each other.
17. Shared learning with other health care students will help me to communicate better with patients and other professionals.
18. Team-working skills are essential for all health care students to learn.
19. I don't want to waste my time learning with other health care students.
20. Learning with health care students before graduation would improve relationships after graduation.

FREE TEXT COMMENT BOX

Any further comments about interprofessional education?

*Question 13 was modified slightly from the original question “The function of nurses and therapists is mainly to provide support for doctors”, to make it more specific to pharmacists.

(Parsell & Bligh, 1999)

Guided Reflection Questions

Reflective Writing Activity

Following participation in 2 workshops, students are asked to complete a reflective writing piece. They are given the following questions to guide their writing.

Please answer the following questions in at least 500 words.

1. Were you uncomfortable working with students from another discipline in the workshops?
In what way?
2. Has learning with students from another healthcare discipline helped you understand their role more clearly? How/how not?
3. How valuable is it to learn with students from another discipline? Why/why not?
4. Were the other students at a different level of learning to you?
5. Can you define your professional role in a healthcare team?
6. How does the role of a pharmacist differ from that of a doctor?
7. What will you do differently following these workshops?

Questions can be categorized as targeting different types of reflection (Mezirow, 1995)

Content: Q.4.

Process: Q.1.

Premise: Qs 2,3,5,6&7

Email Script for Surveys

Dear Student,

You will be attending interprofessional workshops as part of MHU pharmacology teaching this year. As these workshops are new to the course in 2015 we are seeking to determine their effect on students.

We invite you to complete a 5 minute anonymous online questionnaire pre workshop – further information is available by clicking the survey link.

<https://www.surveymonkey.com/r/2VLJW9Y>

Yours sincerely,

Ms. Ebony Dukic (Administrator, year 4 MHU program).

Year 3 PCY pre workshop

Dear Student,

You will be attending interprofessional workshops as part of MHU pharmacology teaching this year. As these workshops are new to the course in 2015 we are seeking to determine their effect on students.

We invite you to complete a 5 minute anonymous online questionnaire pre workshop – further information is available by clicking the survey link.

<https://www.surveymonkey.com/r/2VTS76S>

Yours sincerely,

Ms. Ebony Dukic (Administrator, year 4 MHU program).

Final year medicine

Dear Student,

We are currently developing interprofessional workshops for undergraduate curriculum and we are interested in your views as a final year student of the current course.

We invite you to complete a 5 minute anonymous online questionnaire– further information is available by clicking the survey link.

<https://www.surveymonkey.com/r/2VQB2NW>

Yours sincerely,

Final year pharmacy

Dear Student,

We are currently developing interprofessional workshops for undergraduate curriculum and we are interested in your views as a final year student of the current course.

We invite you to complete a 5-minute anonymous online questionnaire– further information is available by clicking the survey link.

<https://www.surveymonkey.com/r/2VVS3BK>

Yours sincerely,

PARTICIPANT INFORMATION SHEET (Pharmacy)

PROJECT TITLE:

Interprofessional learning between medicine and pharmacy students: what is the impact on students' attitudes and perception of professional identity and role

PRINCIPAL INVESTIGATOR:

Dr Jo Thomas

Dear Student,

You are invited to participate in the research project described below.

What is the project about?

To assess the effect that an interprofessional learning session involving MBBS and Pharmacy students has on student attitudes and approaches to students from other health disciplines.

To evaluate the benefit of the program and make appropriate changes to the program for future years, so as to maximize its educational benefit. This program will also be used as a model for teaching in the future.

Who is undertaking the project?

This project is being conducted by Dr. Jo Thomas, University of Adelaide and Dr. Michael Wiese, UniSA.

Why am I being invited to participate?

As a 4th year Pharmacy student, you will have attended interprofessional workshops as part of your Pharmacotherapeutics program.

What will I be asked to do?

You are being asked to attend an in-depth interview.

How much time will the project take?

It is anticipated that the interview will take 40–60 minutes.

Are there any risks associated with participating in this project?

You may feel uncomfortable talking about your attitudes and experiences with other health disciplines. In the event that you feel the need to talk to someone about this the UniSA has a free counseling service and can be contacted on 8313 5663.

What are the benefits of the research project?

There will be no direct benefits to you from this study. It is hoped that the information gained from this study will be able to be used to inform curriculum design in the future.

Can I withdraw from the project?

Participation in this project is completely voluntary. If you agree to participate, you can withdraw from the study at any time. Your participation or withdrawal will have no influence over grading or assessment in this or any other part of the Pharmacy course.

What will happen to my information?

Information and project records will be confidentially and securely stored onsite in the medical school. The data will only be accessible to the researchers. In line with the NHMRC guidelines the data will be kept for 5 prior to being destroyed.

It is anticipated that the results from this study will be published in a peer reviewed article. No participants will be identified in the publication and aggregated data will be published. Participants can contact the researcher to receive a copy of the results if interested.

Who do I contact if I have questions about the project?

Dr Josephine Thomas on 82224312

What if I have a complaint or any concerns?

The study has been approved by the School of psychology Human Research Ethics Committee at the University of Adelaide (approval number -15/02). If you have questions or problems associated with the practical aspects of your participation in the project or wish to raise a concern or complaint about the project, then you should consult the Principal Investigator. Contact the Dr Paul DelFabbro on phone (08) 8313 4936 or by email to paul.delfabbro@adelaide.edu.au. if you wish to speak with an independent person regarding concerns or a complaint, the University's policy on research involving human participants, or your rights as a participant. Any complaint or concern will be treated in confidence and fully investigated. You will be informed of the outcome.

If I want to participate, what do I do?

Please complete the attached consent form and survey and return to Ms Ebony Dukic, Clinical Education, 1-4 EHB, Royal Adelaide Hospital, SA 5000.

Yours sincerely,

Dr Josephine (Jo) Thomas

PARTICIPANT INFORMATION SHEET (Medicine)

PROJECT TITLE:

Interprofessional learning between medicine and pharmacy students: what is the impact on students' attitudes and perception of professional identity and role

PRINCIPAL INVESTIGATOR:

Dr Jo Thomas

Dear Student,

You are invited to participate in the research project described below.

What is the project about?

To assess the effect that an interprofessional learning session involving MBBS and Pharmacy students has on student attitudes and approaches to students from other health disciplines.

To evaluate the benefit of the program and make appropriate changes to the program for future years, so as to maximize its educational benefit. This program will also be used as a model for teaching in the future.

Who is undertaking the project?

This project is being conducted by Dr. Jo Thomas, University of Adelaide and Dr. Michael Wiese, UniSA.

Why am I being invited to participate?

As a 5th year Medical student, you will have attended interprofessional workshops as part of your Medical Home unit course.

What will I be asked to do?

You are being asked to attend an in-depth interview.

How much time will the project take?

It is anticipated that the interview will take 40–60 minutes.

Are there any risks associated with participating in this project?

You may feel uncomfortable talking about your attitudes and experiences with other health disciplines. In the event that you feel the need to talk to someone about this the University has a free counseling service and can be contacted on 8313 5663.

What are the benefits of the research project?

There will be no direct benefits to you from this study. It is hoped that the information gained from this study will be able to be used to inform curriculum design in the future.

Can I withdraw from the project?

Participation in this project is completely voluntary. If you agree to participate, you can withdraw from the study at any time. Your participation or withdrawal will have no influence over grading or assessment in this or any other part of the Pharmacy course.

What will happen to my information?

Information and project records will be confidentially and securely stored onsite in the medical school. The data will only be accessible to the researchers. In line with the NHMRC guidelines the data will be kept for 5 prior to being destroyed.

It is anticipated that the results from this study will be published in a peer reviewed article. No participants will be identified in the publication and aggregated data will be published. Participants can contact the researcher to receive a copy of the results if interested.

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If I want to participate, what do I do?

Please complete the attached consent form and survey and return to Ms Ebony Dukic, Clinical Education, 1-4 EHB, Royal Adelaide Hospital, SA 5000.

Yours sincerely,

Dr Josephine (Jo) Thomas

Participant Consent Forms



Human Research Ethics Committee (HREC)

CONSENT FORM

1. I have read the attached Information Sheet and agree to take part in the following research project:

Title:	Interprofessional learning -from discordant moments to professional capabilities.
Ethics Approval Number:	15/02 School of psychology HREC

2. I have had the project, so far as it affects me, fully explained to my satisfaction by the research worker. My consent is given freely.
3. I have been given the opportunity to have a member of my family or a friend present while the project was explained to me.
4. Although I understand the purpose of the research project it has also been explained that involvement may not be of any benefit to me.
5. I have been informed that, while information gained during the study may be published, I will not be identified and my personal results will not be divulged.
6. I understand that I am free to withdraw from the project at any time and that this will not affect my study at the University now or in the future.
7. I agree to the interview being audio/video recorded. Yes No
8. I am aware that I should keep a copy of this Consent Form, when completed, and the attached Information Sheet.

Participant to complete:

Name: _____ Signature: _____ Date: _____

Researcher/Witness to complete:

I have described the nature of the research to _____
(print name of participant)

and in my opinion she/he understood the explanation.

Signature: _____ Position: _____ Date: _____

CONSENT FORM

Title:	Interprofessional learning -from discordant moments to professional capabilities.
Ethics Approval Number:	15/02 School of psychology HREC

I consent to the use of my reflective writing piece on interprofessional learning in the study

I understand I will not be identified in the study results and my participation is voluntary

Name: _____ Signature: _____ Date: _____

Interview Questions for Longitudinal Follow-Up



Proposed interview prompt questions

The interviews will be directed by the participants, but the following are illustrative of possible questions that might be asked if prompting is required.

Title:	Interprofessional learning between medicine and pharmacy students: what is the impact on students' attitudes and perception of professional identity and role.
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1. Last year you attended some interprofessional workshops with pharmacy/medicine students. What were the important things you learnt about pharmacy/medical students and pharmacists/doctors?
2. How do you feel about education sessions with other professions? Has that view changed since the workshops?
3. Were students from both professions on an equal footing in the workshop sessions?
4. How important is it for healthcare students to learn with other professions?
5. What are the dangers of healthcare students **not** learning together?
6. How do you see your own professional role in the healthcare team, now and in the future?
7. How do you feel about the role of your own profession in the care of patients? Has that view changed since the workshops?
8. Do you feel there is a power and/or status difference between doctors and pharmacists? If so can you describe this?
9. How does the role of a pharmacist differ from that of a doctor?
10. What do you see as the pitfalls of being a leader of a team? How can they be overcome?
11. What type of opportunities for contact with other healthcare students would be beneficial for your learning?

RIPLS Survey Results

The pharmacy cohort comprised 114 students, Mean age = 21.9 years (19-32, SD= 2.25), 64.7% female. The Medicine cohort comprised 198 students, mean age = 21.6 years (20-44, SD = 2.13), 45% female. Both cohorts were undergraduates with predominantly school leaver entry. Rates of response to survey are shown in Table 1.

Table 1. *Rates of Survey Completion*

	Pharmacy	Medicine
pre-workshop	58/114(51%)	69/198 (35%)
post-workshop	22(19%)	41 (21%)
longitudinal	17 (15%)	39 (20%)

The differences between the groups for all RIPLS subscale mean scores and total score pre-workshops were significant (Table 2), with pharmacy achieving higher scores in all subscales, except “professional roles”.

The data were not suitable for analysis from the 2nd and 3rd time points (post – workshops), due to the low rate of responses. Although some statistical analysis was performed on the pre-workshop data, the RIPLS data were insufficient to warrant publication.

Table 2. *Students' RIPLS Scores Prior to Attending IP Educational Workshops:*

Mean scores at baseline (pre-IP workshop sessions)	max possible score	Pharmacy n= 58	SD	Medicine n= 69	SD	difference bw groups	t-test (p-value)
SUBSCALES							
Team working and collaboration	45	38.36	4.34	36.04	2.59	2.32	0.0003
Professional identity (negative)*	15	12.17	1.85	10.94	1.7	1.23	0.0002
Professional identity (positive)	15	16.79	2.22	15.06	1.7	1.74	0.0000
Professional roles	15	7.79	1.76	8.65	1.59	0.9	0.0046
TOTAL SCORE	95	75.12	7.61	70.7	5.04	4.43	0.0001

* reverse scored (reported to 2 decimal places)