Title:
Investigating characteristics of collaboration between nurse practitioners and medical practitioners in primary health care: A mixed methods multiple case study protocol

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Abstract

AIM: To investigate characteristics of collaboration between nurse practitioners and medical practitioners in the primary health care setting in Australia.

BACKGROUND: Recent definitions of collaboration in the literature, describe it as being based on communication, shared decision-making and the respect and equality of team members. However, research demonstrates a tension between this theoretical ideal and how collaboration between nurse practitioners and medical practitioners occurs in practice. Different socialisation processes of the two professions and legislative requirements influence collaborative practice. The way these two professions overcome traditional boundaries and realise collaborative practice in the primary health care setting, need to be examined.

DESIGN: Mixed methods multiple case study including up to six sites with a minimum of six and a maximum of 20 participants in total.

METHODS: Data on collaborative practice between nurse practitioners and medical practitioners in primary health care will be collected in three phases: 1) two-week direct observation in the practice setting to capture actual behaviour; and context 2) questionnaire to measure dimensions of collaboration; and 3) one-to-one semi-structured interviews with nurse practitioners, medical practitioners and practice managers to record experiences, perceptions and understanding of collaboration.

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DISCUSSION: Triangulation of findings will generate a comprehensive understanding of how collaboration between nurse practitioners and medical practitioners in Australia occurs in the primary care setting. The results of this study
will inform nurse practitioners, medical practitioners practice managers and policy makers on successful models of collaboration.

**Keywords:**

collaboration, collaborative behaviour, cooperative behaviour, collaborative practice, interdisciplinary care, nurse practitioner, primary health care
Summary statement

Why is this research needed?

- A lack of empirical research on how collaboration is understood and experienced by primary health care nurse practitioners and medical practitioners has been identified.
- The mixed methods approach will complement existing research based on interviews and surveys, providing an additional perspective gained from observations.
- The necessity and usefulness of collaborative arrangements required by law needs to be examined.
INTRODUCTION

Nurse Practitioners (NPs) were first introduced in the 1960s in America and the role was further developed in Canada and the UK. NPs were authorised in Australia in 2000 as a new model of care (Australian College of Nurse Practitioners 2010). Nurse Practitioners are highly qualified nurses with an enhanced level of authority to prescribe medication, refer patients and order diagnostic tests (ICN Nurse Practitioner/Advanced Practice Nursing Network 2013). While NP services have been identified as effective, safe and valued by customers (Gardner & Gardner 2005, Carter & Chochinov 2007, Allnutt et al. 2010, Fry et al. 2011), the introduction of nurses with increased autonomy requires the realignment of traditional boundaries in the health care system. The literature reports difficulties associated with NPs and medical practitioners (MPs) working together collaboratively in Australia and elsewhere (Wilson et al. 2005, Norris & Melby 2006, McInnes 2008). Challenges to establishing collaborative practice models between NPs and MPs have been identified for the primary, secondary and tertiary health care sectors and include misunderstandings about the NP role, economic barriers and the existence of hierarchical structures (San Martín-Rodríguez et al. 2005, Clarin 2007, Fewster-Thuente & Velsor-Friedrich 2008, Keith & Askin 2008).

Despite these challenges, collaborative practice among health professionals is likely to become more common in health care provision because it is regarded as one of the most effective strategies to manage patient care (Naccarella et al. 2006, Zwar et al. 2006, Liu & D'Aunno 2011). Collaboration is recommended in health care reforms globally since it is seen as a response to workforce shortages and an ageing
population (Department of Health and Ageing 2009, Institute of Medicine 2011, Mable et al. 2012). Initiatives to promote collaborative practice aim to overcome the existing unidisciplinary and often fragmented management of patients and the lack of knowledge sharing across all disciplines and settings (Thompson & Tilden 2009). Therefore, collaborative practice between NPs and MPs in the Australian primary health care setting is considered necessary, to improve and streamline patient care.

This protocol outlines a research project designed to investigate characteristics of collaboration between NPs and MPs in the primary health care setting in several Australian states (Queensland, New South Wales, South Australia, Victoria and Tasmania) and territories (Australian Capital Territory) to identify successful models of collaboration and to inform health professionals, researchers and policy makers.

Background

systemic, financial and historically developed aspects of the two professions working together. This includes the lack of clarity around the NP role and its scope of practice, limitations in funding of collaborative practice models and regulations of responsibilities and legal liability (Schadewaldt et al. 2013). In addition, the literature also revealed differing perceptions towards collaboration expressed by nurses, NPs and MPs (Hojat et al. 2003, Hallas et al. 2004, Vazirani et al. 2005, Schadewaldt et al. 2013). This refers to differing views about how collaboration occurs in practice, ambivalence about NP autonomy and the level of MP supervision.

In 2010 the Australian Federal Government introduced two statutes to: (1) grant NPs access to the Australian Government’s pharmaceutical and medical benefits funding schemes (Bartlett 2011); and (2) to regulate the access to those funding schemes by requiring NPs to have a collaborative arrangement with a medical practitioner (Roxon 2010). This form of collaboration ‘requires a named doctor to approve’ (Heatley & Kruske 2011, p.56) patient care by a NP. That contradicts the meaning of a collaborative relationship where professionals are not affected by supervision of another professional group (Way et al. 2000). However, it is unclear if NPs in the context of a general practice setting perceive the arrangements as limiting to their practice because NPs have ‘identified medical colleagues as a source of clinical mentorship’ (Desborough 2012, p. 24). No research has been published reporting on how NPs and MPs realise the collaborative arrangements in practice.

Collaboration between NPs and MPs has been identified as a concept that is theoretically and practically necessary (Carr et al. 2002, Martin et al. 2005); and legislatively stipulated in Australia but sometimes difficult to realise in practice. With
the discrepancy between the Federal Government’s definition of NP-MP collaboration and definitions located in the international literature, further understanding and investigation into NP-MP collaboration is necessary. No studies investigating barriers, enablers or views about the characteristics of NP-MP collaboration in the Australian primary healthcare setting were identified, which led to the initiation of this research project.

THE STUDY

Aim
The aim of this study is to investigate characteristics of collaboration between nurse practitioners and medical practitioners in the primary health care setting in Australia. The primary research question is: What are the characteristics of collaboration between NPs and MPs in the context of primary health care in Australia? Secondary questions are: What are the elements of a successful model of collaboration between NPs and MPs in primary health care and how do NPs and MPs perceive collaborative practice?

Methodology
This research will undertake multiple case studies employing mixed methods (Creswell 2007, Creswell & Plano Clark 2011). The case study approach is used to examine the particularity of a phenomenon from multiple perspectives in a real-life context (Stake 1995, Simons 2009). Multiple case studies are advantageous because they are considered to produce more substantial and robust results than a single case study (Eisenhardt & Graebner 2007, Yin 2009). Mixed methods research serves to gain a multi-faceted understanding of collaborative practice (Creswell 2007, Morse &
Niehaus 2009) and to capture both influences from the environment and the complexity of the case that cannot be captured by a single method approach (Yin 2003, Simons 2009) (Figure 1).

Two theoretical models of collaboration will be used in this study as a guide for interview questions, observations and data analysis. From a range of models these were selected because one focuses specifically on collaboration between nurses and medical practitioners (Corser 1998); and the other, based on extensive research on interprofessional collaboration, has been tested in various settings (D'Amour et al. 1999, D'Amour et al. 2004, D'Amour et al. 2005, D'Amour et al. 2008, Drummond et al. 2012). Both models incorporate dimensions of interpersonal behaviour but each model contains differing complementary dimensions. The ‘Conceptual Model of Collaborative Nurse-Physician Interaction’ includes social and historical dimensions that affect collaborative practice (Corser 1998) while the ‘Structuration Model of Collaboration’ covers organisational and structural dimensions (D'Amour et al. 2008). These conceptual models were developed for North American settings but may be useful for sites in other countries.

**Participants**

Eligible NPs and MPs are those who work together in a primary health care setting with experience of working together for at least 6 months. In addition, both NPs and MPs have to be authorised in their current role for at least 6 months. A snowballing technique will be used to identify potential participants (Patton 2002). A research invitation will be distributed by email to appropriate professional organisations. Nurse
practitioners and MPs who express an interest in the study will be checked for eligibility during an initial phone call.

Up to six sites will be chosen based on maximum variation of site characteristics (Patton 2002). A meeting will be arranged with NPs and MPs at participating sites, either by telephone or in person to go through study details and clarify questions participants may have prior to signing the consent form. Where these positions exist, practice managers will also be asked to participate in an interview of maximum one-hour length because they provide another perspective on how NPs and MPs collaborate. Written informed consent will be sought from all participants.

Since there are 22,555 MPs working in primary health care (Australian Health Practitioner Regulation Agency 2011) the selection of participating cases will be determined by the much smaller number of NPs. A recent survey by the Australian College of Nurse Practitioners found that 30 (13%) of 217 NPs who responded to the survey work in primary health care/general practice (Australian College of Nurse Practitioners 2011). Assuming that a maximum of 13% of the 590 NPs (Nursing and Midwifery Board of Australia 2012) work in a primary health care setting, the potential sample size could comprise 77 NPs who may work in collaboration with an MP. It is anticipated that a maximum of 20 participants across a minimum of three sites with different characteristics and at least one NP and one MP per site is sufficient to generate a comprehensive understanding of collaborative practice.
Data collection

Once sites have been identified, data collection will be undertaken in three phases, as follows: 1) observation of NPs and MPs to capture actual behaviour and context; 2) questionnaire with quantifiable and validated measurement of collaboration administered to NPs and MPs; and 3) semi-structured interviews with NPs, MPs and practice managers to record perceptions, experiences, expressed feelings and thoughts.

Observations: The first phase will comprise observations by the primary author in each primary health care setting. Observations are used to obtain an impression of how collaboration between NPs and MPs takes place (Patton 2002, Lofland et al. 2006). The lack of studies using observations was identified in the preparatory literature review, indicating that most studies solely used interviews and scales to investigate collaboration. However, those methods reflect only perceived collaborative practice, whilst undertaking observations of NP-MP interactions will add an outsider perspective to capture actual collaborative behaviour. The non-participant observer (VS) will follow the NP to record all NP-MP encounters. While openness is emphasised in qualitative inquiry, the observer will use an observation guideline with operationalised dimensions to organise observation in such a complex setting (Spradley 1980, Stake 1995, Patton 2002). The dimensions to be observed will include the practice layout, staff structure, interaction and communication between NP and MP including referral patterns and the amount and length of consultations. Field notes will be supplemented with more details as soon as practical after the observation sessions (Lofland et al. 2006). The observation sessions will be completed when data saturation has been achieved and observed instances become
repetitive (Patton 2002, Yin 2009). Based on previous research on interprofessional collaboration (Szekendi 2007, Miller et al. 2008, Reeves et al. 2009, Van Soeren et al. 2011) it is assumed that one to two weeks of full-time observation per case will be sufficient. Full-time observation was chosen to minimise total time per case for practical reasons.

Questionnaire: In the second phase, NP and MP participants will be given questionnaires containing three scales measuring experience with current collaboration, satisfaction with this collaboration and beliefs in the benefits of collaboration. The purpose of the questionnaire is threefold: first, to enhance the descriptive results of interviews and observations through quantifiable measures; second, to validate corresponding statements and observations with the quantitative scores of the scales and third, to compare NPs and MPs perceptions on collaboration. The scales have undergone psychometric testing and permission to use the scales has been obtained. The scales are:

* Satisfaction with current collaboration scale:* This 15-items scale uses 6-point Likert scales to measure levels of satisfaction with various dimensions of collaboration. The scale has been developed and applied in primary health care settings, originally developed by Way et al. (2001b). Separate scales for NPs and MPs exist. A modified version by Donald et al. (2009) with an additional four questions that are relevant to this study and a Likert scale of 6 instead of 7 points will be used for this study. A 6-point Likert scale omits the neutral position and forces the participant to indicate an opinion direction, which is desirable for this study.
Experience with current collaboration scale: This scale uses 6-point Likert scales assessing agreement or disagreement with nine statements on current experience with collaboration. The scale was also originally developed by Way et al. (2001b) and then modified by Donald et al. (2009). Separate scales for NPs and MPs exist. The modified version by Donald et al. (2009) with a reduced Likert scale of 6 instead of 7 points will be used for this study.

Beliefs in the benefits of collaboration scale: This scale was originally developed as a subscale to measure interprofessional processes (Sicotte et al. 2002). The subscale measures beliefs in benefits of collaboration and uses 5-point Likert scales to assess agreement or disagreement with five statements (Sicotte et al. 2002).

Semi-structured interviews: In the last phase of data collection semi-structured interviews will be held with individual NPs, MPs and practice managers. Interviews enable in-depth collection of data that reflect experiences, feelings, attitudes and opinions (Kvale & Brinkmann 2009) that cannot be observed (Patton 2002). Thus they are a complementary method and serve as an additional source of information. Interviews have been chosen to be the last phase of the study to exclude influence on responses to the questionnaires or behaviour during observations by raising awareness of collaborative practice with interview questions. The interviews will cover understanding and experience of collaboration, examples of collaboration and consultation, shared decision-making, barriers and facilitators to collaboration, collaborative arrangements, supervision and autonomy. Interviews will be conducted at an agreed time and venue and audio-recorded with participant consent. To
guarantee best possible documentation of what has been said the interviewer will transcribe the interviews soon after recording (Gillham 2005).

**Data analysis and integration**

Analysis in case study research can be based on both categorised data and interpretation, that is on both analysis of frequencies and narrative description (Stake 1995). Data will be analysed using inductive and deductive approaches. Transcripts from interviews and field notes from observations will be managed with QSR International’s NVivo 10 software program. There will be five points of data analysis:

1) Particularities of each case will be described in a descriptive narrative (Yin 2009).

2) Thematic analysis (Braun & Clarke 2006) will be used to identify recurring themes, events and patterns in observational and interview data (Patton 2002, Lofland *et al.* 2006). This first step of analysis of qualitative data will be an inductive approach through which newly discovered themes will be categorised (Patton 2002). In a second step, a deductive approach will be applied by repeatedly reading through the raw data and searching specifically for statements or observations that relate to the dimensions determined by existing theoretical models previously outlined (Corser 1998, D'Amour *et al.* 2008). Related themes will then be extracted and allocated respectively (Patton 2002). This process is related to Yin’s (2009) analysis technique of pattern matching whereby empirically derived patterns and predefined patterns can be compared. In a third step, counting and tabulation will be used to analyse quantifiable measures such as number of consultations, number of meetings and who initiated those interactions (Stake 1995).
3) Scoring of the three scales will be analysed using descriptive comparisons and independent samples t-test or Mann-Whitney-U-test, as appropriate to instrument characteristics, sample size and distribution of data, to identify differences between response scores of NPs and MPs.

4) Scores of the scales and relevant themes from interviews and observations will be compared and triangulated at the stage of data interpretation.

5) In a final stage, a synthesis of findings of different cases, a cross-case analysis, will be undertaken (Patton 2002). Cross-case analysis in multiple case study research is used to understand commonalities and differences between the cases (Stake 2006). The number of common occurrences across cases will give an idea about the generalisability of results (Stake 1995, Yin 2009).

Data integration of this mixed methods multiple case study will occur at two points: At analysis stage two, field notes and interview transcripts will be combined before the analysis stage and then analysed together, also called within-method triangulation (Denzin 2009, p. 301). At analysis stage four, findings from interviews and observations and the results of the questionnaires will be triangulated at the stage of data interpretation, also called between-methods triangulation (Moran-Ellis et al. 2006, Morse & Niehaus 2009). That means that findings will be considered in relation to each other after data have been analysed in each method (Moran-Ellis et al. 2006, Morse & Niehaus 2009). The triangulation of methods will serve as data verification, validation and disclosure of contrasting findings (Patton 2002). Data analysis will be complete when ‘sources of information have been exhausted (…) [and] new sources lead to redundancy’ (Patton 2002, p. 467).
Ethical considerations

Ethics approval for this study was granted by the Human Research Ethic Committee of the Australian Catholic University in August 2012. Site-specific approval will be gained prior data collection where required.

Informed consent will be sought in writing from participants. Their voluntary participation in the study, benefits and risks, confidential data management and their right to withdraw from the study at any time during the project will be explained to participants. Their autonomy will be respected by providing informed choice of participation (National Health and Medical Research Council [NHMRC] 2007, Beauchamp & Childress 2008).

Participants will be guaranteed that data will be stored in a secure place. Until completion of the project, data will be re-identifiable with a pseudonym or participant number replacing identifiers (NHMRC, 2007). Privacy will be protected by using pseudonyms in reports and publications (Holloway & Wheeler 2010). However, guaranteeing anonymity in such a small sample may be difficult (Simons 2009). Thus, results will be published in aggregated format and direct quotes will only be published if participants cannot be identified.

Participants may feel uncomfortable or get emotionally distressed during observation or interviews (Patton 2002, Holloway & Wheeler 2010). Therefore, free nationally available counselling services or support through professional associations will be offered to participants in case they become upset or distressed as a result of study.
participation. Confirmation of continuing consent will be sought verbally from participants before entering a new phase of the study.

**Rigour**

Several steps will be taken to assure quality of data. First, the use of multiple methods increases (construct) validity by providing multiple perspectives/measures on the same phenomenon (Yin 2009).

Second, while case study research is undertaken to understand the uniqueness of a case and not to generalise (Stake 1995), transferability (Lincoln & Guba 1985) can be established in multiple case study research when findings are generalised in light of a broader theory by comparing findings with dimensions of a theoretical framework, in this study with dimensions of the two collaboration models described earlier (Yin 2009). If findings relate to some of the dimensions of the models their transferability to other settings is justified because they are supported by the theoretical framework. Findings can also be generalised if they occur regularly during the study. Stake (1995) states that case studies can ‘increase the confidence’ (p. 8) someone has about a generalisation.

Third, a researcher diary will accompany each step of the research process to explicitly monitor thoughts, feelings, reactions and expectations that may at a later stage be used for data analysis (Simons 2009). Self-reflection in qualitative investigations is crucial to find out in what way predispositions of the researcher ‘may have constrained what was observed and understood’ (Patton 2002, p. 301).
Fourth, reliability will be established through the use of a protocol and exact documentation of each step of the process to facilitate traceability for external persons (Yin 2009). A well-structured database in the QSR International’s NVivo 10 software will be used for data management and serve as the evidentiary source of conclusions (Yin 2009). If the researcher is able to provide convincing evidence for systematic and rigorous fieldwork, credibility and trustworthiness of data can be achieved (Lincoln & Guba 1985).

DISCUSSION

Results from international studies suggest that, despite the large number of definitions and models describing the ideal of collaboration, the real-world experience is often a traditional model of unidisciplinary patient care under different levels of hierarchy (Martin et al. 2005, Bailey et al. 2006, Phillips et al. 2008). Professional, organisational and financial issues affecting collaboration between nurses or NPs with MPs reported from overseas, indicate that similar issues may be evident in the Australian setting.

With collaborative practice being one of the most promising strategies to manage patient care (Naccarella et al. 2006, Zwar et al. 2006, Liu & D'Aunno 2011), successful models of collaboration are needed. The Australian Government supports collaboration between health professionals (Australian Health Ministers' Conference 2004), however, information on collaboration between NPs and MPs in the Australian primary health care setting is scarce. Thus, generating empirical data will build the evidentiary basis to either improve or reinforce collaborative practice between NPs
and MPs working in primary health care. This mixed methods multiple case study research will be the first of its kind in Australia.

The research questions will be best answered by applying mixed methods research in a case study setting as outlined in this protocol. Rich description of collaborative practice and its circumstances will be generated. At the same time the rich descriptive data are mirrored against quantitative measures to validate findings. The lack of mixed methods research in studies examining collaboration has been highlighted in the literature (Petri 2010).

This study is significant for the establishment of an understanding of collaborative practice and to promote the use of mixed methods research as an approach to fully capture the multiple angles of a phenomenon under investigation. This protocol will also serve as an example of developing a protocol for a mixed methods study with a qualitative core component.

**Limitations**

This study focuses on a small sample size of Australian NP and MPs in the primary health care setting. The sample size is restricted by funding and logistical issues. Therefore, generalisation of results from this study may be limited. However, the aim of this study is to generate a comprehensive understanding of how collaboration occurs in the primary health care setting. Including practice settings from several Australian states and territories will increase the richness of data.
The researcher comes from a nursing background and therefore establishing rapport with the MPs might be more challenging than with NPs. This may influence observation and interview results. However, recordings of the researcher’s reflections and regular supervision meetings with other researchers will assist with preventing biased views and identifying them should they exist.

CONCLUSION

This protocol outlines a mixed methods multiple case study that will investigate collaborative practice between NPs and MPs in the Australian primary health care setting. This will fill knowledge gaps on how collaborative arrangements are realised between NPs and MPs, how obstacles are overcome and what resources are required to facilitate collaborative practice. Characteristics of several cases will be examined and the perspectives of NPs and MPs recorded to illustrate how collaborative practice occurs and to understand what collaboration means to the professionals involved.

An overview of the findings from the international literature was provided. The research questions, developed from research gaps identified with the literature review, have been presented. The multiple case study approach will apply mixed methods research and triangulate findings from observations, questionnaires and semi-structured interviews.

The outcomes derived from this study, will serve as a knowledge base to expand theory and inform research and practice. Better understanding of collaboration will contribute to collaborative practice, increase knowledge sharing and eventually improve patient care.
REFERENCES


NVivo qualitative data analysis software (2012) Qsr International Pty Ltd.


### Figure 1: Research Process

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*Figure I Research process*