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Preparing a Realist Evaluation to Investigate the Impact of Privately Practising Nurse Practitioners on Patient Access to Care in Australia

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Abstract

Background: Evaluation of privately practising nurse practitioner (PPNP) services in Australia is an important issue, because the sustainability of viable health services requires that they are underpinned by sound research. As part of ongoing work in relation to the evaluation of PPNP services, the authors plan to use realist evaluation (RE) to explore, not only whether PPNP services increase patient's access to care, but also the means by which they achieve (or do not achieve) this outcome. RE is a complex methodology and its application requires careful preparation. **Objective:** To present the application of the RE methodology to an evaluation of PPNP services of health care in Australia. **Method:** This paper explores the philosophical underpinnings of RE and articulates the steps taken in preparing to apply RE to an evaluation of PPNP services in Australia. **Discussion:** RE is a complex methodology to understand and apply. There is an absence of documented detail in terms of how to apply RE to ensure that the evaluation is truly 'realist'. Yet making the choice to apply RE to evaluations of PPNP services in Australia and overseas holds many advantages, primarily because of RE's emphasis upon the context in which health care is delivered and how and why the context relates to the outcomes produced. This paper will contribute to the emerging dialogue on how to apply RE to evaluations of health care and will assist those considering using RE.

Keywords: Realist evaluation; evaluation, nurse practitioner; critical realism; theory driven evaluation

Introduction

In choosing a methodology to evaluate Privately Practising Nurse Practitioner (PPNP) services in Australia, it was considered important that any evidence produced would be capable of offering theories and detailed explanations with the rigour to underpin existing and future services. A recent review of nurse practitioner (NP) public services in New South Wales identified '…a notable absence of theory in the Australian research…either to inform the research or to develop theory based on the findings of the research" (Masso & Thompson, 2014, p3). Instead, the focus of evidence is most frequently based on particular components of NP care or outcomes, such as patient length of stay, prescribing habits of NPs and comparisons between NPs and doctors.

Given that PPNP services are a more recent phenomenon, relative to the public employee NP in Australia, it was paramount that the early evaluations of PPNP services had the ability to explore 'how' and 'why' PPNPs produce whatever results they do. To address this, the authors chose a theory driven form of evaluation known as Realist Evaluation (RE). RE places focus upon the context in which the subject of the study operates and also on the mechanisms (decision and reasoning processes) through which outcomes are produced. This in turn enables the generation and refinement of theories.

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These evidence-based theories would potentially allow workforce planners and clinicians to articulate the components of PPNP services that enable patient's access to care and thereby satisfy health workforce demand. Such articulation would be achieved by answering the following questions: 'does it work?;' 'why does it work?' and 'for whom does it work?' (Pawson & Tilley, 1997). The point of difference between RE and many other forms of evaluation is its' emphasis on the specific context in the development of an understanding of the success or failure of any given intervention (Blamey & Mackenzie, 2007). Through RE, researchers can link the pertinent contexts to the outcomes they produce and examine the mechanisms by which the outcomes arose. This enables the generation and refinement of theories on which to base future services. In this paper the authors present their preparation for the application of RE to PPNP services in Australia. In addition to a detailed discussion of the philosophical underpinning of RE, the processes and lessons learned in applying RE to PPNP services are presented. The advantages of the RE methodology are highlighted where relevant.

NPs in Australia

The NP role has been in existence since the 1960s in the United States of America, the 1980s in the UK and the first NP was authorised in Australia in 2001 and was a remote area nurse in New South Wales (NSW) (Australian College of Nurse Practitioners, 2015; Pulcini, Jelic, Gul, & Loke, 2012). From the earliest discussion paper on the introduction of NPs to Australia (NSW Health, 1992), the *stated* intent of their introduction was to expand and increase patient access to health services. The potential examples provided in the first Discussion Paper included women's health, remote area nursing and primary care, specifically in relation to underserved populations in contexts such as the homeless, mental health and in private practice (NSW Health, 1992, p. 7-9). Despite significant opposition in the early days from elements of the medical profession (Chiarella, 2002; Chiarella, 2000), NPs are now endorsed to prescribe medications, initiate pathology and diagnostic imaging investigations and make referrals to other health care practitioners (HCPs). This should allow NPs to provide entire episodes of patient care without duplication of services, whilst still working collaboratively with other HCPs (Masso& Thompson, 2014).

What is known of PPNP services in Australia

PPNP services are relatively new to Australia, but there is also only a small volume of literature on the topic internationally (Currie, Chiarella, & Buckley, 2013). In 2010, legislative amendments (*Health Legislation Amendment (Midwives and Nurse Practitioners) Act 2010*(Cth)) allowed NP services to be subsidised through the Medicare Benefits Schedule (MBS). However, prior to this legislation NPs were not prevented from working privately, but their patients were unable to seek reimbursement through the MBS. Since the introduction of the MBS subsidies for NPs, a number of PPNP services have been initiated in Australia (Currie et al., 2013). Examples include: NPs integrating with pharmacies in a primary health care and health promotion role (McMillan & Emmerton, 2013); community mental health roles (Cashin, 2007; Raeburn et al., 2015); and NPs working in GP surgeries (Helms, Crookes & Bailey, 2015). These private practice roles have an emphasis on primary health care.Existing literature highlights issues impacting upon the sustainability of PPNPs, including limited access to MBS items (Elmer &Stirling, 2013); the level of NP reimbursement (Helms et al., 2015; Currie et al., 2013); and the complexity of the requirements for collaborative arrangements (Harvey, 2011).

What aspects of PPNP services have been evaluated?

The authors are aware of only one published evaluation related to PPNPs in Australia (Elmer &Stirling, 2013). This study identified issues of NPs' access to clinical investigations and the potential for duplication of services. The Department of Health and Ageing funded an evaluation of NP services in Aged Care between 2012-13 (Clark, Parker, & Davey, 2014), the majority of which were PPNP services. The results of this project are not yet published.

Evaluations of Australian NP public models of care

Australian evaluations of public NPs have focused on outcome measures such as waiting and treatment times (Considine, Kropman, & Stergiou, 2010; Considine et al., 2006; Jennings et al., 2013; Jennings et al., 2008); patient satisfaction (Jenningset al., 2009; Wilson & Shifaza, 2008); and comparisons with doctors (Dinh et al., 2013; Dinh et al., 2012; Jennings et al., 2009; Lee et al., 2014). The body of NP evidence confirms that NPs provide a high quality of care, which is important in ensuring patient safety and enhancing confidence in NP services.

The volume of comparative research between NPs and doctors has received commentary in the literature, in so far as these studies limit the acknowledgement of NPs as care providers in their own right (Weiland, 2008) with their own values and unique approach to health care delivery (Wand, White & Patching, 2011).

Yet, from a RE perspectives, comparisons of services are often useful in identifying why something works better than something else. For instance, one of the benefits patients identified about NP services is that NPs spend longer with their patients than doctors (Horrocks, Anderson & Salisbury, 2002; Laurent et al., 2008).

Realist evaluation and nursing

Researchers have used RE to evaluate a range of programs including: nursing education (Stavropoulou & Stroubouki, 2014) (Brimdyr et al., 2012; Machin & Pearson, 2014); infection control interventions (Williams, Burton & Rycroft-Malone, 2012); the care of patients with dementia (Tolson& Schofield, 2012); and workplace culture (Wilson, McCormack & Ives, 2005). The authors' justifications (where provided) for using RE were: to capture the differing realities of a person's experience and the contextual factors that influenced their perceptions (Machin & Pearson, 2014); to tease out transferable lessons from interventions (Williams et al., 2012); to explore context factors (Tolson & Schofield, 2012); and to gain an in-depth exploration (Wilson et al., 2005).

There are three realist evaluations of NP services, all undertaken in Australia (Elmer & Stirling, 2013; Prosser et al., 2013; Wand et al., 2011). Two of these evaluations have already been mentioned and focused on women's health and aged care. The third, by Wand et al. (2011) applied RE to the evaluation of an emergency department-based mental health NP outpatient service in Australia. The process of the evaluation encompassed the development, implementation and a pilot evaluation of the mental health outpatient service.

Wand et al., (2011) demonstrated the ability of RE to explore beyond the surface of interventions. This enables the exploration to identify what decision and reasoning processes are triggered by an intervention, in a given context, to produce defined outcomes. Particularly enlightening was the exposure of the concept of "The 'nurse' in the Nurse Practitioner" (Wand et al., 2011, p.396), and the way in which the patients treated by the service identified a unique difference in the approach of the NP compared to experiences with other health professionals. In keeping with the realist philosophy, Wand et al. (2011) adopted a mixed methods approach using realist interviews, surveys and focus groups. One of the challenges of using realist evaluation is ensuring that the research design holds true to the principles of realism. An understanding of the philosophical underpinnings of RE has been of great assistance to this end.

Philosophical underpinnings of realist evaluation

RE is complex to understand and an awareness of its philosophical and ontological underpinnings assists in grasping the key concepts. This understanding is particularly important because RE neither provides nor promotes a strict technical research procedure (Pawson & Tilley, 1997).

In a recent text, Pawson (2013) identified the'Seven Pillars of Realist Wisdom' (Pawson, 2013, p3-12) and drew on the work of social scientists, including Popper and Campbell, to explain the foundations of the RE methodology. The first proponent of critical realism was Bhaskar, in 1975.Bhaskar developed the Transformational Model of Social Action and laid outthe concept of generative mechanisms, which later became a fundamental tenet of RE. Bhaskar's work was modified and extended by many authors, including Archer (1995), who developed a furtherkey concept termed 'morphogenesis'. This concept is explained below as it holds direct relevance to the RE methodology in terms of causal relationships (Archer, 1995).

Archer (1995) defined morphogenesis as the relationship between social 'structure' and 'agency'. At any given time an "agent" (ie an individual human being) can beinfluenced by social structures and this influence in turn can effect the agent to alter their behavior or thinking. This effect on the agent can then cyclically result in a change to the initial structure. The cause and effect between structure and agency may continue in an ongoing cycle. Such an understanding of morphogenesis is important in developing theories about what works for whom in which circumstances (Pawson & Tilley, 1997), because it means that one cannot predict or forecast the sameoutcomes in every circumstance.

Embedded in morphogenesis is the acknowledgement that not all causes are physical and that non-observable entities, such as human reasoning prior to action, may result in a different outcome or effect (Wilson & McCormack, 2006). In RE terms, human reasoning and decision-making are understood to be *mechanisms* for change and they are critical to understanding why something works in one particular *context* and perhaps not in another (Pawson & Tilley, 1997).

Because each *context* is different, RE does not claim toforecast or predict specific outcomes in every circumstance. Instead RE refines theories to expose tendencies and 'sets of ideas' that can be generalized from one context to the other (Pawson, 2013, p6). Therefore the power of RE, for the evaluation of PPNP services, lies in its ability to develop explanatory theories as to why and how something does or doesn't work. These explanatory theories can then potentially be taken from one context and applied to another.

Philosophically, RE sits between positivism and constructivism and incorporates the idea that reality is assumed to exist and can only be apprehended imperfectly. Bhaskar (1975) proposed the notion that reality is stratified and referred to three distinct domains: the real, the actual and the empirical. The domain of the real is the level of underlying structures and mechanisms; the domain of the actual is what occurs and can potentially be observed; and the domain of the empirical is what is observed or experienced (Wilson & McCormack, 2006; Archer, 1998). By its design, RE attempts to evaluate each of these domains.

From the critical realist perspective of reality it follows through that research findings are fallible and can, at best, capture a partial representation of reality. RE argues that the experimental paradigm is not well suited to evaluations (Pawson & Tilley, 1997), because it is designed to isolate variables and to reduce contextual factors which are '..conceptualised as confounding variables..' that the evaluator aims to control (Blamey & Mackenzie, 2007) p440). RE asserts that any *outcome* caused by a specific *mechanism* is contingent upon the *context* in which it occurs (Walsh, Duke, Foureur, & MacDonald, 2007); furthermore the mechanisms introduced by the intervention are seldom the only ones in operation (Porter & O'Halloran, 2012).

In the case of PPNP services, the context specific factors operate within a health care system, usually primary health care, which is by its very nature complex, with multiple layers existing within any given organisation. These context specific factors may include financial, individual and group psychological factors, team cultures, and organisational factors (Pawson, 2003). Controlling these variables in a laboratory style evaluation design would not provide a realistic viewpoint of the causal relationships at play (Wilson & McCormack, 2006). For this reason, proponents argue that RE is better placed to explain complex health care interventions, rather than traditional evidence based practice methods, including randomized controlled trials (Porter & O'Halloran, 2012). The ability of RE to drill down to specific *context mechanism* and *outcome* configurations provides a far more detailed explanation of why and how an intervention has or has not worked.

Realist evaluation applied to PPNP services

RE, as proposed by Pawson & Tilley (1997), is considered part of the school of theory-driven evaluation meaning that the process of research starts with a theory to be tested and ends with a more refined theory. When the term theory is used in this paper it refers to the definition by Sales et al., (2006):

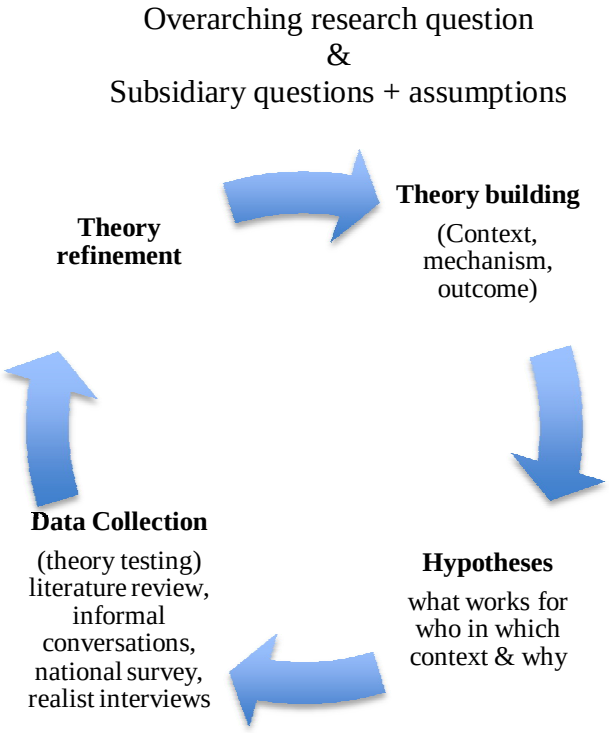
"A set of logical constructs that jointly offer answers to the questions "why" and "how", as in "why would someone change their behavior in this way?"

(Sales et al., 2006, p48)

The term 'realist evaluation' has been derived from the title of Pawson & Tilley's (1997) book 'Realistic Evaluation'. In applying RE to PPNP services, the intent is to develop theories about how and for whom specific models of care might or might not work and why. Whilst RE is a complex methodology, there are core components, and an overview of these will be presented here by identifying the steps taken in the authors' preparation for evaluation of PPNP services.

Rather than prescribing a strict and unified approach to RE, Pawson & Tilley (1997) promote a more general application of the characteristics of RE. In Pawson's own words "…realist inquiry is a broad and welcoming church" (Pawson, 2013, p14) and thereby invites adaptation as necessary to tackling the "..array of policies and programmes" (Pawson, 2013 p14). In applying RE, the absence of a unified prescribed process can be unnerving and it is helpful to formulating a research plan. Based upon Pawson & Tilley's (1997) RE cycle Fig 1 identifies the author' research processes to investigate the impact of PPNPs on patient access to care.

Fig 1: Evaluation of PPNP models of care in Australia, adapted from Pawson & Tilley (1997) RE cycle



Overarching research question

Prior to entering the cycle, a research question is developed. It is important to use the concepts that are reflective of the realist methodology and this means consideration of what works for whom in which circumstances and why (Pawson & Tilley, 1997). These concepts can be articulated using wording that includes: the *context* (the who); the *mechanisms* (the how and why); and the *outcome* (the what). The authors' research question for evaluation of PPNPs in Australia is 'How and why and in which contexts do PPNP services impact on patient access to care in Australia?' It is further helpful to define subsidiary questions to assist in narrowing the focus of the research such as;

- How and why PPNP MBS reimbursement does processes impact on patient access to care?
- What features of context affect the abilitiesof PPNPs to function to their full scope of practice?

Theory building

The next step is to synthesise existing theories, past experiences, previous evaluations or research studies (Marchal et al., 2012; Pawson & Tilley, 1997) to build and develop initial theory. Theory building can be difficult when there is limited documented evidence available. In the case of PPNPs, the authors attended conference presentations on the topic of PPNPs and held informal discussions with relevant stakeholders and advisors. In addition, an integrative review of the international literature on PPNP services was undertaken in which themes were extracted from the literature (Currie et al., 2013).

The authors decided to use RE as the methodology for their evaluation of PPNPs after the integrative review was undertaken. To generate theories, a 'realist reading' (G. Westhorp, personal communication 13 February 2014) of the field notes and papers identified in the integrative review was undertaken by the first author (Currie). The realist reading involved re-reading the papers included in the integrative review along with the field notes gathered from conferences and conversations to generate theories from a realist perspective, i.e. based on the concept of *what works for whom in whatcontext and in what respect* (Pawson & Tilley, 2004, p19).

In keeping with the RE methodology, the theories were written in the form of *Context*, *Mechanism* and *Outcome* Configurations (CMOCs) depicted in Table 1, and were discussed and agreed between all authors.The CMOCs in Table 1 refer to the constraints that the four MBS item numbers are reported to cause PPNPs. These four NP MBS item numbers are time based (e.g. 20 minute consultation) and the reimbursement amount is substantially lower than that received by medical practitioners for a similar service (Currie et al., 2013). The authors have developed a theory that, in order for PPNPs to maintain a sustainable income, PPNPs focus their practice towards the lengthier chronic and complex care items so that they can access the highest level of reimbursement (40 minute consultation).

Table 1: CMOCs PPNP MBS Reimbursement[4]

Context	**Mechanism**	**Outcomes**
Nurse practitioners (NPs) who only use MBS item numbers for reimbursement of patient consultations	M1. PPNPs direct their clinical practice activity towards longer patient consultations M2. PPNPs focus their practice towards chronic & complex care	O1. PPNPs use the 40 minute NP MBS item number more than the others O2. PPNPs develop expertise in chronic and complex care O3. Increases patients access to chronic & complex care services

In building theory, realists focus on specific configurations of *context* (the who), *mechanism* (how and why) and *outcome* (the what). RE advocates a level of abstraction of theory defined as 'middle range' (Merton, 1968). Whilst this sounds potentially complex, it is simply saying that the pitch of the theories lies between the minor and the grand in terms of the level and breadth of explanation they offer of any given causal relationship. The advantage of middle range theories is that they are big enough to be tested and refined (Pawson & Tilley, 1997).

When developing *CMO* configurations, it is best to start with the *outcome* and then work backwards to populate *context* and *mechanism*. An *outcome* is the result of the interaction between *context* and *mechanism*, so for an evaluation of PPNPs these included: being able to work to full scope of practice; increasing patient's access to care; financial sustainability of the PPNP service.

Context refers to specific features of participants, organisations, staffing, history, culture and beliefs (Pawson & Tilley, 1997). The *context* can be norms, values and shared beliefs, culture and, less often, geographical location. For evaluations of PPNP, the *context* included the norms and values of the doctors that the PPNPs collaborated with, as well as the *context* of the PPNPs care, for example chronic care, aboriginal health, acute care.

In explaining *mechanism*, Pawson & Tilley (1997, p65) use the metaphor of 'underlying' *mechanisms* to depict the often hidden nature of a mechanism and the need to explore beneath the surface to identify why something works. In simple terms, *mechanisms* refer to a decision or reasoning process or emotion that, when combined with the *context*, produces *outcomes*. Identifying the *mechanism* was the most challenging aspect of developing the PPNP CMOCs because *mechanisms* are rarely observable. It was helpful to trace the mechanisms through an examination of the effects they produce when triggered by a specific *context*. The possibilities for *CMO* configurations can clearly be infinite and so (as with any study) the researcher must decide which CMO configurations to pursue within the research (Marchal et al., 2012; Pawson, 2003).

[4]The CMOCs in Table 1 have not been tested through research

Step Two: Hypothesis

On the basis of the *CMO* configurations, hypotheses may be drawn and presented in statements of what might work for whom in what circumstances (Pawson & Tilley, 1997). For example, in the evaluation of PPNPs, one hypothesis we generated is that: 'The MBS item numbers available to PPNPs restrict PPNPs scope of practice and thereby reduce patient access to care'.

Step Three: Data Collection

The design and analysis tools are crafted so that they enable the testing of the *CMO* propositions (Marchal et al., 2012). RE promotes a cumulative approach to theory refinement (Pawson & Tilley 1997; Pawson, 2013). Linked to this gradual approach is RE's endorsement of mixed methods research design. The accumulation of understanding is exemplified by Elmer & Stirling (2013) in their realist evaluation of a NP model in Tasmania. Elmer & Stirling (2013) conducted interviews with clients and stakeholders and used a survey to analyse patient and stakeholder satisfaction. At each stage of their research, the initial *CMO* configurations were reviewed and refined (Elmer &Stirling, 2013). Rather than revealing "big bang" answers (Pawson, 2003; Pawson & Tilley, 1997), this gradual approach allows for generalisations to be drawn in terms of 'sets of ideas' or patterns called 'demi-regularities' (Pawson, 2013 p 6) that can be applied to other contexts (Pawson & Tilley, 1997). Whilst thorough, this gradual approach can also be time-consuming (Blamey & Mackenzie, 2007; Walsh et al., 2007) and resource intensive (Salter & Kothari, 2014). RE endorses multi-method data collection and analysis (Pawson & Tilley, 1997). In designing each phase of research, the question to be asked -'*what works for whom in what context and in what respect'* (Pawson & Tilley, 2004, p19) -must be addressed from the perspective of all key stakeholders (Pittam et al., 2010). This may mean choosing appropriate data collection methods to observe the different levels of an organisation, including political, strategic, organisational, operational and individual (Blamey & Mackenzie, 2007). Whilst a mixed methods approach is used in numerous research methodologies, this pluralist approach is a fundamental characteristic of RE.

In undertaking an evaluation of PPNP services, the authors' first piece of research was a national survey. The survey had two aims: firstly it was designed to obtain demographic information pertaining to PPNP activity in Australia and secondly to obtain data that might answer the research question in relation to PPNPs impact on patient access to care. The survey included questions on MBS, collaborative arrangements, clinical governance and practice setting. The authors' intention is to develop the next phase of this research on the basis of the analysis of the results of the survey. The issue with this approach is the time invested in ethics submissions for each phase of the research. The authors have learned that there are advantages in developing an overarching research design at the initiation of the first RE cycle that includes the likely data collection designs, interviews, surveys, observation, for all phases. This would allow the researchers to submit one ethics application and apply for amendments as and when the specifics of the data collection tools became apparent.

Step Four: Theory Refinement

The data collection phase is followed by theory refinement, whereby realist evaluators use the CMO configuration as the looking glass to analyse the data (Pawson & Tilley, 1997) by identifying that, which confirms and/or refutes the *CMO* configurations and hypothesis. At the completion of theory refinement the RE cycle can begin again, with further data collection and theory testing and refinement, thereby increasing the specificity and level of explanation. The RE cycles are potentially infinite and the researchers decide at what point the specificity has reached saturation. RE is largely an interpretive method of evaluation (Tolson& Schofield, 2012) and the gradual accumulation of understanding over time allows researchers to capture any evolving changes to the relationship between structure and agency. The next data collection for the evaluation of PPNP services will include realist interviews and analysis of MBS data.

Conclusion

This paper has presented the preparation for application of RE to an evaluation of PPNP services in Australia. RE is a complex methodology to understand and apply and it is intended that this paper will add to the body of literature on the ways in which RE can be applied to health care.

The strength of RE to evaluations of PPNP services is the ability to link the pertinent contexts to the outcomes they produce and examine the mechanisms by which the outcomes arose and thereby generate and refine theories upon which to base future services.

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