

EXPLORING THE VALUE OF AN EXTENDED THEORY OF PLANNED BEHAVIOUR MODEL:
TO EXPLAIN NURSES' AND HEALTH CARE ASSISTANTS' INSTRUMENTAL RESEARCH
UTILISATION INTENTIONS IN CLINICAL PRACTICE

BY

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ABSTRACT

INTRODUCTION

Clinical guidelines, as products of research, are increasingly used to raise the quality of care delivery in acute hospital NHS Trusts. However, their use is impeded by many organizational and individual barriers and understanding of psychological barriers is underexplored. This study aimed to explore 'intention' as a psychological explanation of health professionals' research utilisation behaviour using an extended Theory of Planned Behaviour (TPB) social cognitive model.

METHODOLOGY

The 'care round checklist' was identified, in collaboration with practice partners, as a suitable guideline behaviour to evaluate. A theory-driven questionnaire was developed and utilized to measure nurses' and Health Care Assistants' (HCAs') intentions. Inferential statistical tests were used to establish differences in nurses' and HCAs' intentional behaviour and the predictive value of the TPB model.

RESULTS

270 questionnaires were returned from 24 wards. The TPB model explained a modest level of intention; 20% of nurses' and 24% of HCAs' care round intentions. Nurses' attitudes and perceived control best predicted intentions, whilst HCAs' intentions were predicted by attitude and practice habit.

CONCLUSION AND RECOMMENDATIONS

The TPB model lacked sophistication to sufficiently explain intentional guideline behaviour, within a complex guideline behaviour, though role differences were significant. Further variables could add to the predictive value of intention. Future work should acknowledge limitations in the TPB model in explaining intention. Clinically, role differences should be recognized in the future implementation of care rounds.

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CHAPTER 1: INTRODUCTION

1.1 The research problem

As a nurse educator and practitioner, for many years I have been interested in what makes health care professionals use or not use research to inform their practice. Understanding this problem has vexed many policy makers, researchers and clinicians and, has become well-known as the 'research to practice gap'. Therefore, this study was designed to make a further contribution and provide additional theoretical and empirical insight into what may influence the research to practice gap.

1.2 Significance of the research problem

Bridging the research to practice gap in health care provision has now become part of a national and international policy and practice agenda. In the United Kingdom (UK) the National Institute for Clinical Excellence (NICE) has been established; in the United States (US) the Agency for Health Care Research and Quality, and in Australia the National Institute for Clinical Studies have all been established to increase the likelihood that care being delivered is based on evidence of what works (Rycroft-Malone *et al*, 2004). In the UK NHS, basing care on the best possible evidence has evolved as a dominant theme for policy, practice and the management of services (Taylor and Taylor, 2009).

This is not simply an ideological approach to the delivery of health care practice. For NHS services, demonstrating safe and effective care is now embedded as a legal requirement (Keogh, 2013) and, is central in the regular assessment of patient care

services in the NHS (CQC, 2014). Thus, bridging the research to practice gap is supported by an extensive infrastructure and an expectation that evidence is used to demonstrate effective, safe and non-harmful practice (RCN, 2014).

Several international-wide studies have highlighted the problem of patients not receiving the level of care required respective to the evidence. In the USA it has been estimated that patients receive 55% of recommended care (McGlynn *et al*, 2003); in Australia it is proposed that patients receive on average evidence-based care only 57% of the time (Hunt *et al*, 2012). It is further proposed that preventable harmful outcomes in the US could be avoided if clinicians reliably used evidence-based therapies (Pronovost, 2013), wherein 200,000 die of sepsis, 120,000 of teamwork failures, 100,000 from health care acquired infections, 80,000 from diagnostic errors and 68,000 from decubitus ulcers (Wachter *et al*, 2013). Furthermore, it is estimated that 30-40% of patients do not get treatments of proven effectiveness and 20-25% patients get care that is not needed or is potentially harmful (Grol, 2003; Grimshaw *et al*, 2012).

Thus, over the last fifteen years numerous reports have highlighted the continuing gap between what is known to be best practice and the care that patients receive (McGlynn *et al*, 2003; Hussey *et al*, 2004; Madon *et al*, 2007; Eccles *et al*, 2009; Grimshaw *et al*, 2012; Sandstrom *et al*, 2015). This continuing gap has been recognised as an international problem in developed and underdeveloped countries (Straus *et al*, 2009; Goyet *et al*, 2015).

Therefore, resolving this gap is important, as there is a developing evidence-base over the last twenty years which has demonstrated that the use of research or research products does improve patient outcomes. Thomas *et al* (2002) in their Cochrane review established that in 7 of the 9 studies in which guidelines were used to improve patient outcomes, significant improvements were found in infection rates and symptom relief. Similar beneficial effects have been found in the use of guidelines for nursing interventions in the management of nutrition (Barr *et al*, 2004); pelvic fracture (Balogh *et al*, 2005); and hip fracture (Beaupre *et al*, 2006); wherein on average a 10% improvement in outcomes were observed. It could be argued that as 'effectiveness' of nursing interventions was reported through observational empirical design, these studies lacked the rigour required to fully test the effectiveness of using the guidelines (Roberts and Dicenso, 1999). Nevertheless, the available evidence-base does indicate a positive clinical effect.

A further finding from these nursing intervention studies was the variation of effect on patient outcomes. This suggested that, clinical guidelines can produce a 'desired effect' and improved patient outcomes, but this was dependent upon the delivery and actual use of the guideline; a familiar finding in which the variation of effects are most likely due to variable application of evidence or adherence (Fretheim *et al*, 2006; Francke *et al*, 2008). This is further supported by systematic review evidence, which has demonstrated that even when awareness of and, agreement with guidelines among users is high, adherence and adoption is low (Mickan *et al*, 2011).

Therefore, despite producing increasing quantities of high quality evidence it would appear that the slow uptake or failure to adopt evidence still persists, which is a generic problem for all health professionals (Pronovost, 2013, Grimshaw *et al*, 2012). Given the significance of the problem, the need to resolve this gap is important to the integrity and accountability of health care practitioners in their delivery of care (Pronovost, 2013), and in avoiding detrimental patient outcomes (McGlynn *et al*, 2003).

1.3 The problem of using research in clinical practice

The problem of getting health care professionals to commit to and use research and products of research in their practice appears to be an on-going, almost intractable problem (Grimshaw *et al*, 2012). In UK nursing practice, it is not unusual to see an 8-15 year gap in the production of research and its consistent use in clinical practice (Bostrom and Wise, 1994; Landrum, 1998). Thus, it is well-known that uptake of research has historically been slow (Closs *et al*, 1994; Estabrooks, 1998; Veeramah, 2004).

There are many human (internal) and external barriers that prevent the use of research in clinical practice (Champion and Leach, 1989; Hannes and Vandersmissen, 2007; Bonner and Sando, 2008; Chau *et el*, 2008). Several studies have highlighted factors, such as the characteristics of the innovation, the social setting, the organisational context, innovation strategies, patients' attitudes and compliance, and the individual health care professional (Foy *et al*, 2001; Grol and Grimshaw, 2003; Eccles *et al*, 2005; Michie *et al*, 2008; French *et al*, 2005; Presseau *et al*, 2013). The complexity is further captured in theoretical frameworks, such as complex service-based change frameworks

(Kitson *et al*, 1999; Rycroft-Malone, 2004) and behaviour-based theoretical frameworks (Michie *et al*, 2005).

Therefore, recognising this complexity, it has been further argued at the same time we need to understand exactly what is meant by 'research use' (Estabrooks, *et al*, 2003; Rycroft-Malone *et al*, 2009). This is important, as barriers to research use can be different depending on the activity of 'research use' which may mean different things to practitioners (Bircumshaw *et al*, 1990; Strandberg *et al*, 2014).

1.3.1 The construct 'research utilisation'

Conceptually, research activities have focused upon addressing the problem of 'knowledge translation' or 'research utilisation'. These concepts have been described as: "*ensuring that stakeholders are aware of and use research evidence to inform their healthcare decision-making*" (Grimshaw *et al*, 2012:2).

The central problem of 'research utilisation' has focused on *how, why* and *what* influences clinicians or healthcare workers' use of research-based evidence in their decision-making (Eccles *et al*, 2009). Thus, the primary purpose of research utilisation has been to address the gap between what is known from research and the implementation of this knowledge, with the intention of improving health outcomes and efficiencies in the delivery of health care (Grimshaw *et al*, 2012). However, at the same time, exploring this problem has revealed the complexity of the research to practice gap.

The construct research utilisation is multifaceted (Estabrooks *et al*, 2003). Recognizing this is important, as if it is unclear how the construct is perceived then it is impossible to measure *indicators* of research utilisation in clinical practice (Strandberg *et al*, 2014). Therefore, there is a need to know (conceptually) what research utilisation is, and what research utilisation activity looks like within the context of practice. Understanding these parameters will also assist in the reliable testing of the construct and help explain health care professionals' behavioural response to using research in clinical practice (Estabrooks *et al*, 2011).

Firstly, as highlighted by Estabrooks (1999) it is important to distinguish between research utilisation and evidence-based practice, as although the terms used are interchangeably, they are not synonymous. Evidence-based practice encompasses more than the findings of research and also includes patient preference, cost, research and clinical expertise (Dicenso *et al*, 1999; Rycroft-Malone *et al*, 2004). By contrast, research utilisation clearly relates to the use of research or products of research used in practice as a professional endeavor to inform and change practice from using 'research' (Estabrooks, 1999; Rycroft-Malone *et al*, 2009).

This distinction makes clear the differences between the two constructs, and is important to make as behaviours are likely to vary when different sources of evidence are referred to when making decisions to inform practice (Cummings *et al*, 2010). Thus, evidence-based decisions would normally involve collaboration with patients and, wider clinical views and other pragmatic implementation issues such as the availability of resources (Rycroft-Malone *et al*, 2004). Using a wider scope of sources to inform

decision-making should also be viewed as professionally crafted and distinct clinical behaviour. By contrast, the activity of research utilisation focuses only upon the use of research and not wider sources - as identified in an evidence-based framework. Therefore, the focus of behaviour is different. Research utilisation focuses upon the usefulness of research as a contribution to making a clinical decision, which is not the same as making a more holistic evidence-based decision. Understanding this difference helps to understand the construct as applied to the context of clinical practice (Squires *et al*, 2011).

From an early exploration of the concept, Larsen (1980) and later Beyer and Trice (1982) conceptualised research utilisation into three different categories: '*instrumental*' research utilisation (using products of research, guidelines and protocols), '*conceptual*' research utilisation (professional reasoning when using research) and '*symbolic*' research utilisation which could be persuasive but is not necessarily used to inform decision-making (Larsen, 1980). Based on this conceptualisation, Stetler (1985) focused on the processes of 'instrumental', 'conceptual' and 'symbolic' definitions of the construct and how this related to the individual practicing nurse, when applied to their practice. Stetler (1985) viewed a nurse's role as using research to make judgments to inform decision-making in practice; describing nurses as being 'knowledge orientated' rather than 'rule-orientated' and also recommending that nurses should have professional freedom to make 'judgments on their practice' and use skills in critical appraisal to judge the relevance of different sources of research-based information (Stetler, 1985). Thus, the early conceptual understanding of the construct acknowledged that research should be used as an adjunct to inform clinical decision-

making and not as a replacement for making judgements, which is consistent with how research should be viewed in evidence-based decision-making (Craig and Smyth, 2012). Rycroft-Malone *et al* (2009) also demonstrated that this does happen in nursing practice, as when protocols are used to make decisions in practice, nurses' often use 'mental flowcharts', which indicated a level interpretation in the use of protocols, which was consistent with conceptual understanding of the construct.

Development of 'instrumental', 'conceptual and 'symbolic' research utilisation in a Canadian Nursing context was taken up by Estabrooks (1999). This clearly depicted instrumental research utilisation (IRU) as the use of research in direct application for decisions; conceptual research utilisation (CRI) as using research findings to enlighten a person's perceptions and understanding; and symbolic research utilisation for helping to persuade others to change their practice in line with research (Estabrooks, 1999). Estabrooks (1999) conceptual delineation of concepts was important as it highlighted the pragmatic and cognitive differences in how research or actual research products, such as clinical guidelines were used as a 'process' of research utilisation.

Strandberg *et al* (2014) explored the construct further and empirically demonstrated that of the three central concepts of research utilisation, instrumental research utilisation was the only viable and measurable concept. Using a mixed method approach and factor analysis to differentiate concepts, it was identified that Swedish nurses found it difficult to distinguish between definitions of 'conceptual' and 'persuasive' research utilisation, but recognised clearly the use of 'instrumental research utilisation' in their practice. This was an important finding as it illustrated that some concepts of research

utilisation behaviour can be measured. Furthermore, given that CRU and PRU are difficult to identify and articulate, this would make the behavioural measurement of the concepts difficult, as to be measured accurately behaviours need to be clearly conceptualised (Ajzen, 1991).

These findings further indicated that a behavioural analysis of research utilisation should focus upon IRU, because it is a behaviour that is recognisable. Further behavioural analysis of IRU activity also established that behavioural decisions involved both a cognitively active deliberation process, but also a passive behaviour (Strandberg *et al*, 2014). This was an interesting discovery because it established that behavioural decision-making is made up of different components, making the empirical exploration and measurement of IRU behaviour a tangible objective. Translated into clinical practice, Rycroft-Malone *et al* (2009) further demonstrated the link between clinical decision-making and clinical thinking when nurses use guidelines, as perceptual differences in the usefulness of guidelines were reported.

Further support for the process of research utilisation as an active and deliberative decision-making process has been reported across all research utilisation concepts. Wilkinson (2010) and Nutley *et al* (2007) support the viewpoint that there is a flow of thinking and influence of not only CRU on IRU but also PRU. The relationship was thought to be influenced by a fluid process of active and passive decision-making, as a deliberative or passive process. Therefore, it is clearly evident that behavioural decisions and deliberations are made when nurses use research products in clinical practice, and this is a measurable activity.

These findings further supported the need to understand the behavioural components of research utilisation. In clinical practice, instrumental research utilisation involves the use of clinical guidelines, or protocols that synthesize current evidence on how to most effectively organize and deliver health services for a given condition (Weisz *et al*, 2007, Rycroft-Malone *et al*, 2009). Further empirical evidence has explored the practicalities of using guidelines to inform practice and how this relates to clinical decision-making.

1.3.2 Using guidelines

Clinical guidelines are used as a means for promoting best practice, with the expectation that standardising care through guidelines will improve the quality of care provision (Eccles *et al*, 2005). The principle of standardisation sets a benchmark as to how practice should be delivered and indicates the quality expected in practice delivery (Rycroft-Malone, 2009). However, evidence suggests that the use of guidelines, protocols and checklists to standardise practice behaviour does not always result in a standardised health care delivery response.

In the practice environment, relatively few studies have explored how and what influences nurses', health care workers' and health professionals' use of guidelines to inform their practice and what type of knowledge sources are preferred when making decisions about care. Thompson *et al*, (2001) examined acute nurses' use of clinical information in the context of clinical decision-making. In an in-depth triangulated exploratory study nurses' use of guidelines and protocols was very low. The lack of use was associated with a lack of belief in the clinical credibility, and to some extent a lack of motivation and organizational support. This resulted in nurses and carers often not

referring directly to protocols as a direct information source, and preferring to rely upon human sources of information to resolve uncertainties in clinical practice (Thompson *et al*, 2001). Validated by a good range of data collection methods, this study illustrated how nurses' and carers' actual use of research products was not predicted by protocol and was dependent on the practice environment. Also, again, this further illustrated the deliberative processes involved in the use of research products, which additionally involved other evidence sources – peers and clinical mentors, which provided a 'context' for the clinical reality of decision-making.

The clinical reality of how nurses use and apply guidelines has been further reported. Rycroft-Malone *et al*, (2009) explored how protocol-based care affected nurses' and carers' clinical decision-making. Using a robust triangulation of ethnographic methods, in several clinical situations nurses and carers did not standardise their decision-making in line with guidelines, checklists, protocols, and care pathways. Consistent with earlier findings, a variety of information sources informed decision-making as part of a deliberative process. Again, this was consistent with the conceptual understanding of research utilisation and illustrated the independence of thought associated with nurses' in their decision-making. This also highlighted that nurses are reluctant to standardise their decision-making in line with rigid protocols or guidelines, preferring to practice with a level of autonomy and independent thought in each clinical situation.

From a nursing and clinical decision-making perspective, perhaps the nursing profession should not be surprised by these findings. Nursing is a practice-based profession that traditionally has drawn upon tacit and propositional knowledge to inform practice

(Benner, 1984). Tacit knowledge generally reflects nurses' personal knowledge gained through experience of the clinical situation (Benner, 1984). Whereas, propositional knowledge reflects formal knowledge gained through many different sources (Chinn and Kramer, 1999; 2011). Propositional knowledge includes clinical guidelines and protocols used to help nurses inform and guide their practice. Furthermore, registered nurses are expected to draw upon both approaches as part of their decision-making, in which an 'evidence-based' and reflective approach to practice encourages recognition of the holistic nature of clinical situations, to also include service users and the clinical environment (Aveyard, 2009). It could be argued, therefore, that by integrating knowledge from standardised tools and using protocols as 'mental flowcharts' nurses are being evidence-based in their delivery of care. From a professional perspective this also illustrates that a variety of other sources and context are likely to influence a standardised approach to care delivery.

Further evidence from the application of a change framework illustrated the importance of understanding the context of the clinical situation to understand guideline use. Cummings *et al* (2010) used the Promoting Action on Research Implementation (PARiHS) framework to explore the effect of clinical context, such as the working environment and peer support on paediatric nurses' research use in practice. Results of the cross-sectional survey indicated that supportive 'contexts' were associated with higher research use. Although, the findings of this study were limited by the organisational contexts evaluated within the framework, these findings did indicate that context was influential on one group of nurses' research use behaviour. In a similar evaluation of the effect of 'context', Rycroft-Malone *et al* (2010) and Gillespie and Marshall (2015) both

used a 'realist' synthesis to explore the effect of context. Recognising that changing clinical contexts are likely to affect behaviour, in both studies the use of research products was additionally influenced by the type of professional implementing the research product and having a 'stake' in the product being implemented to improve patient care. This added further evidence that the clinical situation, peer support and belief in the guideline combine to influence the potential differences in the implementation of guidelines in practice delivery.

Therefore, the developing evidence-base would suggest that the actual use of research products are unlikely to result in a standardised and consistent delivery of care (Thompson *et al*, 2001; Rycroft-Malone *et al*, 2009, 2010; Gillespie and Marshall, 2011). Moreover, individual differences in the use of standardised approaches are likely to be influenced by, context, perceived usefulness and a feeling of being involved in the implementation and development of the tool. Therefore, in addition to understanding that instrumental research utilisation is a deliberative clinical decision-making activity, the use of guidelines can also be moderated by the relevance, interpretation and the clinical context in which the research products are utilised (Thompson *et al*, 2001; Rycroft-Malone *et al*, 2009, 2010; Cummings *et al*, 2010; Gillespie and Marshall, 2011).

Thus, despite the drive for an evidence-based approach to standardise the effective delivery of care, these empirical examples have indicated that the use of guidelines, protocols or checklists to reduce variations in nurses' standards of care delivery are likely to be inconsistent, and could have significant implications for the achievement of quality care (Rycroft-Malone *et al*, 2009).

1.3.3 HCAs role, and use of guidelines

Most of the research which has explored how carers' use guidelines has focused on nurses. However, HCAs in their extended role routinely implement guidelines and checklists in their day to day practice (Spilsbury, 2009); therefore, providing some context to their developing role is an important consideration in the use of guidelines.

Recent statistics show that, in the UK, there are over 1.3 million people in the unregistered care workforce that are not registered nurses (Cavendish, 2013); comprising level 2, 3 and 4 Health Care Support Workers, half of which work in the acute sector (Cavendish, 2013). Traditionally, the HCA's role has been supportive to the nursing workforce, in which registered nurses have a responsibility to delegate care (NMC, 2012). In more recent times, delegation of care has included traditional nursing tasks, and direct patient care, such as: bathing, monitoring, and observing patients, and talking to and reassuring patients and their relatives (Butler-Williams *et al*, 2010). Detailed ward observations, in a 2-year study (Kessler *et al*, 2014), also established that HCAs spent the majority of their time on a typical early shift carrying out direct and indirect care. For more senior HCAs, this also included the use of protocols or guidelines, when assessing the need for basic care, but duties were also carried out by lower grade HCSWs.

Although, protocol-driven care, officially, is a HCAs and not a HCSWs role (NHS Scotland, 2012), blurring of roles and role boundaries are evident (Spilsbury, 2009; Wakefield, 2009; 2010). Therefore, in meeting patient's basic care needs it is increasingly likely that

the majority of health care providers could be asked to use documentation to facilitate their role, particularly in the provision of meeting basic care needs.

Therefore, given the context of the developing role of unregistered health care providers, such as HCAs and HCSWs, it is important to understand their thoughts on using protocols and checklists; as using documentation, does affect their work experience and caring duties (Schneider *et al*, 2010), and their attitudes towards care provision (Kessler *et al*, 2010). As highlighted, most research has focussed on nurses' and other health professionals' use of guidelines; further highlighting the need to develop the evidence for this important care provider group.

1.3.4 Barriers to research utilisation

The problem of barriers to using research and products of research in clinical practice is also complex. Two distinct approaches have been used to explore barriers. The first approach has taken a pragmatic line and explored organisational barriers. The second approach has focused upon exploring individual clinical behavioural barriers. These are discussed below.

1.3.4.1 Pragmatic and organisational barriers

Much of the early empirical investigation into nurses' and health care providers' barriers to research utilisation was explored from an organisational and pragmatic context (Dunn *et al*, 1998). Rogers's Theory of Diffusion of Innovation was often cited as a guide to explore nurses' and health care professionals' research use (Rogers, 1995). As a model of 'change', the overriding goal of Rogers's (1995) theory was to explain the spread of

new ideas in organisations. Change was thought to be influenced by the structure of social networks and by specific individuals in or at the margins of these networks (Rogers 1995). In this theory the four main elements thought to influence the spread of new ideas were: the innovation, communication channels, time and the social system.

Therefore, the origins of empirical enquiry into nurses' use of research was influenced by this organisational change model. Much early empirical investigation in the 1990s and beyond was influenced by the use of the 'Barriers Scale' (Funk *et al*, 1991a), a scale underpinned by Rogers's theory. The 'Barriers Scale' was a survey instrument of 28 items designed to measure the characteristics of the adopter (nurse), characteristics of the organisation (setting), of the innovation (research) and characteristics of the communication of research (presentation) (Funk *et al*, 1991a). Developed in the USA the scale was used internationally to understand more about the effectiveness of organisations and individuals working in organisations to use research and products of research. This also included numerous studies in the UK (Walsh, 1997a, 1997b; Dunn *et al*, 1998; Parahoo, 2000) and internationally, e.g. (Kajermo *et al*, 1998; Cabana *et al*, 1999; Brown *et al*, 2008). The lasting influence of this questionnaire is still evident. Several studies (Salbach *et al*, 2010; Cahill *et al*, 2013; Weng *et al*, 2013, Zardo and Collie, 2014) have used the questionnaire to identify health professionals' barriers to using research and has identified individual differences in knowledge, skills, awareness and attitudes and beliefs.

However, when the scale has been used to target and understand behaviour and behaviour change, the scale has been less effective. Numerous studies have suggested

that using multidimensional scales in questionnaire surveys to identify differences in behaviour and behaviour change has often been ineffective (Davis *et al*, 1995; Watson and Myers, 2001; Jenner *et al*, 2002). This is because whilst components of behaviour (attitudes and beliefs) can be identified the questionnaire is unable to explain how attitudes and beliefs are formed and how this affects behaviour. Thus, there are limitations to using barriers scale items in understanding individual behaviour and behaviour change.

What is more, numerous empirical studies have highlighted that when trying to change the behaviour of health professionals, identifying and targeting practical and organisational barriers does not get to the root of the research-transfer problem. A systematic review of studies in which guideline use was evaluated revealed that adoption and adherence were low even when awareness of, and agreement with guidelines among target users was high (Mickan *et al*, 2011).

Gould (1994) and Larson (1995) both highlighted that when trying to change a health professional's hand hygiene behaviour, targeting factors such as time, number of sinks, type of hand hygiene product and education strategies, did not produce the desired behaviour of adherence to a hand hygiene guideline. Similarly, targeting education, audit and feedback as a means for improving instrumental research utilisation behaviour has historically produced mixed results (Davis *et al*, 1995; Watson and Myers, 2001). Jenner *et al* (2002) hypothesised that one possible reason for the failure of educational interventions may be explained by the tendency to assume a relationship between knowledge acquisition and subsequent behaviour change, when in fact this may not be

the case. Thus, this evidence indicated that focusing a research-based practice change on the outcomes derived from multidimensional models (or components of multidimensional models) does not provide a full insight into *why* practitioners do or do not change their behaviour. Further studies, involving nurses and health professionals have provided additional insight into understanding their behavioural response to using research in their practice.

1.3.4.2 Behavioural barriers

Understanding health professionals' behavioural response to the use of clinical guidelines is important, as new clinical guidelines or protocols are consistently used as *mechanisms of change* to improve and standardise clinical practice (Rycroft-Malone *et al* 2009). It is also evident that reactions to the use of guidelines and subsequent behaviours can vary between and across practitioners (Rycroft-Malone *et al*, 2009). These findings coincided with calls at the time for a better understanding of factors that influence individual clinical *behaviour* (Walker *et al*, 2003; Michie and Lester, 2005; Godin *et al*, 2008), in which attitudes and beliefs are components of individual behaviour (Michie *et al*, 2005). Therefore, there is a need to understand behavioural differences and what might determine these differences as behaviour change processes are responsible for observed change (Michie *et al*, 2005).

The weight of evidence explaining individuals' behaviour towards the use of research products is less abundant when compared to evidence on organisational and pragmatic factors. Much of the research has focused upon understanding individual characteristics or determinants. Estabrooks *et al*, (2003) and Squires *et al*, (2011) in their review of

individual determinants of nurses' research use highlighted 'attitude and beliefs' as the only significant determinants. This is interesting because it confirmed that 'individual disposition' was an important influence in health professionals' research utilisation behaviour, and recognised the need to analyse internal factors which influenced an individual's behaviour rather than just external factors (Grimshaw *et al*, 2001; 2004).

Consequently, a plethora of research using a variety of methods has explored health professionals' attitudes and beliefs toward using research in different areas of practice (Bjorkstrom and Hamrin, 2001; Barnard and Wiles, 2001; Bonner and Sando, 2008; Munroe *et al*, 2008, Weng *et al*, 2013; Kajermo *et al*, 2014). Much of this research has often revealed that nurses have a positive attitude toward using research and research products (Bonner *et al*, 2008; Kajermo *et al*, 2014). However, the reliability of attitude as an indicator of research use has been questioned. One of the key observations indicates that 'positive attitudes' towards using research have not really changed over the last 20 years, despite the drive for evidence-based practice and contrary evidence that uptake is inadequate (Thompson *et al*, 2001; Rycroft-Malone *et al*, 2009). When educational interventions are implemented to improve attitude often this does not produce the desired or sustained change in behaviour (McCormack *et al*, 2013). This suggests attitude alone may not be the best predictor of behaviour and other components of behaviour may determine individual behaviour.

In recent years, the importance of understanding the role of individual behaviour, has been explored theoretically. The Theoretical Domains Framework (TDF) is a good example and represents an integrated theoretical framework of a number of domains

and theoretical constructs, synthesised from 33 theories and 128 constructs (Michie *et al*, 2005). The framework has been used to explore dementia (Murphy *et al*, 2014), low back pain (McKenzie *et al*, 2008, 2010), hand hygiene (Boscart *et al*, 2012; Dyson *et al*, 2013), and many more clinical behaviours all helping to explain elements of health practitioner behaviour. The TDF has also been used to evaluate behavioural barriers to specific interventions (Dyson *et al*, 2013), to uncover individuals' beliefs (Murphy *et al*, 2014) and individual barriers to using clinical guidelines (Dyson *et al*, 2013). This has further demonstrated the influence of behaviour in the use of guidelines. However, the framework has not been used specifically to explain how attitudes and beliefs are formed and how this affects behaviour. Thus, there have been gaps in understanding how and why attitudes and beliefs might influence behaviour.

As behaviours and determinants of behaviour are very much context specific, and likely to vary from one behaviour to the next (Ajzen, 1991; Squires *et al*, 2011), a variety of guideline behaviours need to be explored. Therefore, there is a further need to explore the effect of standardising practice on the formation of positive and negative behaviour. It is also possible that continued standardization of practice through the use of research products will also affect the motivation and behaviour of staff in their delivery of care, which could affect the quality of care provision.

1.3.5 Quality of care provision in acute hospitals

Over the last 15 years, despite the increase in available guidelines and protocols to support best practice, evidence has emerged that challenges the effectiveness of guidelines as a strategy to reduce variations in safe and quality care. For example, recent

national reports from the Maidstone and Tunbridge Wells NHS Trust (Healthcare Commission 2007); The Health Service Ombudsman's report (Abraham 2011) and more recently the Francis Report (2013), the Keogh report (2013), and Care Quality Commission (CQC) reports (Care Quality Commission 2011, 2015) reveal sub-standard quality care. This has led key stakeholders to suggest that the nursing and caring professions are facing a loss of public confidence (Keogh, 2013).

The Francis enquiry into the Mid-Staffordshire Foundation Trust Hospital (DoH, 2010) has had particular impact in highlighting reduced standards in essential nursing care. The Francis Report (2013) provided over 300 pages of stories of low standards of continence care, bladder and bowel care, personal and oral hygiene, nutrition and hydration, privacy and dignity and cleanliness and infection control. Just one example captures the reality of patient experience and levels of care provided:

"The patient was then transferred to Ward 6 earlier than his family felt appropriate. On the ward his fluid levels were not monitored, the buzzer was placed out of reach and his colostomy bag leaked regularly. The patient required his chest to be suctioned regularly, yet many nurses admitted they did not know how to carry out this procedure. His family tried to find out about his treatment but.....a nurse refused to leave her office to speak to the family. After eight days on the ward the patient contracted MRSA and was returned to the Intensive Care Ward, where he deteriorated rapidly and died"
(Francis, 2013:15).

This story highlights nurses' lack of skills, knowledge and also compassion in assessment and delivery of care, and at the same time illustrates that achieving quality of care delivery is complex, in which the effective use of guidelines are only likely to resolve part of the problem. Findings from the Francis report (2013) initiated a review of

Fundamental Standards of Care which re-focused on: person-centred care, dignity and respect, consent, safety, safeguarding from abuse, food and drink, premises and equipment, good governance, staffing, fit and proper staff, duty of candour and display of ratings (CQC,2014).

However, despite findings from this review and commitments to improve the delivery of services, further Care Quality Commission (CQC) reports have exposed variations in the provision of safe and effective care (CQC, 2014). For example, The State of Health Care and Adult and Social Care in England CQC review (2014) inspected 62 NHS Acute Trusts (almost a quarter of NHS acute trusts in England) based on these criteria. However, continued variations in the quality of care were found between trusts, between hospital sites, between hospital services and within each service (CQC, 2014). In this report, insufficient levels of staff were identified as a key problem affecting the delivery of fundamental areas of care, although at the same time it was acknowledged that this was only part of the problem.

1.3.6 Raising standards of care

Scrutinised by the CQC, the nursing profession alongside other health professionals, have had to demonstrate an improvement in quality of care and raised standards. As a nursing policy response to the Front Line Nursing Care Review (COI, 2010) nurses were expected to be visible guardians of quality and safety, and take control of the supervision and monitoring of care within and across teams and throughout the care pathway (COI, 2010). To achieve this, a number of quality improvement systems have been utilised.

One of the biggest changes has seen the use of clinical dashboards to capture the range of nursing metrics and outcomes of patient care (RCN, 2011). Early nursing metrics have captured falls assessment and nutrition and also patient experience measures (Sawbridge and Hewison, 2011; Dr Foster, 2013). The use of nursing metrics to capture outcomes of care has been advantageous, particularly when demonstrating how standards have been raised. For example, metrics have been used to demonstrate 'effectiveness and safety' and improvement in the quality of service provision. Thus there is ongoing evidence that outcome-driven care can be an effective process to drive-up the quality of care provision and meet standards of care of 'patient safety', 'effectiveness' and 'patient experience' identified in the State of Care review (2014).

To enhance the use of nursing metrics as a means to raising standards, the guardians of this approach have discussed the challenges of making outcome measurement sensitive to the measurement of quality. To be a useful representation of quality of care, as observed by many trusts, outcome measures need to have clear relevance to perceptions of 'quality of care', as outcomes are only as good as the measures developed to measure quality (Raleigh and Foot, 2010). Thus a challenge to the measurement system has been to identify meaningful outcomes which adequately capture 'safety', 'effectiveness' and 'patient experience' (RCN, 2011).

Several NHS Trusts have used collaborative approaches to help develop meaningful metrics (Raleigh and Foot, 2010). The use of a range of stakeholders including service-users, different grades of nurses, health care assistants and allied health professional groups has helped to improve the validity of meaningful outcomes. Triangulating the

sample is also seen as good practice and consistent with good qualitative sampling approaches when developing outcomes (Munhall, 2012). Further examples of good practice in the development of nursing metrics has seen the development of person-centred outcomes (McCance *et al*, 2011). This has illustrated that outcome measures can be more patient sensitive and improve the patient experience (CQC, 2014).

At the same time, there has been a drive by those responsible for measuring and reporting outcomes to also improve the consistency of nursing performance and hence the quality of nursing care provision. To achieve this a LEAN approach to care provision has been utilised. Kelly (2013) describes the use of LEAN methodology in the NHS as the use of lean tools to ensure continuous, incremental improvement in services which are aimed at eliminating inefficiency and variation in the provision of healthcare.

There has been some support for the principle of a 'LEAN' methodology (Jones and Mitchell, 2006; Johnson *et al*, 2012) to improve the delivery of NHS services, wherein some NHS trusts have used protocols to demonstrate the improved 'effectiveness' of care delivery (Dix *et al*, 2012; Brosey and March, 2014). However, the evidence for 'effectiveness' is often anecdotal and derived from audit data which raises questions to the true effectiveness of this approach. There has also been considerable professional objection to the idea that nursing and care delivery can be standardised through the use of checklists and scripted procedures – a characteristic of the LEAN approach (Joosten *et al*, 2009; Winch and Henderson, 2009; Seddon, 2010).

From a caring perspective, Joosten *et al* (2009) and Seddon (2010) argue that standardising practice delivery often does not fit with caring objectives of providing quality person-centred care, as all people have individual needs and therefore some variation is needed in the delivery of care. Furthermore, nurse leaders also highlight that standardising care deliver through checklists creates an illusion that care has been delivered because paperwork has been completed, but this approach to care can result in a tick-box approach which is not necessarily representative of quality (Seddon, 2010). It is further argued that providing ‘compassionate care’, an important outcome identified in the Francis report (2013), is at odds with a standardised approach to practice delivery, as it requires an empathic approach, consistent with person-centred care (Flynn, 2013). Champions of a LEAN approach (Jones and Mitchell, 2006; Johnson *et al*, 2012) argue that standardising practice should not detract from providing ‘individualised care’. However, there is limited evidence supporting the view that standardising practice enhances ‘individualised care’, and increasing evidence to suggest that using a model of efficiency originally designed for engineering, results in non-person-centred care, staff dissatisfaction and high levels of attrition (Winch and Henderson, 2009).

Moreover, recent evidence suggests that health professionals’ behaviour is not ‘standardised’ and made more consistent by the use of guidelines, protocols and checklists (NHS England, 2014). These findings are also consistent with nurses and carers’ use of guidelines, protocols and checklists, where often the desired standardised ‘behaviour’ does not fit with the expected protocol designed to standardise care delivery (Rycroft-Malone *et al*, 2009). Both these studies used a realist evaluation and provided

a clinical context to how protocols and guidelines were used, providing a 'real world' view of the practicalities of guideline delivery a strength of this methodology (Wood and Ross-Kerr, 2014).

Therefore, despite the nursing profession recognising that the measurement of outcomes and the performance required to achieve outcomes are complementary goals in raising the quality of care (RCN, 2011; Dr Foster, 2015), improving nurses' and carers' performance through the use of standardised tools is a questionable approach when designed to improve 'effectiveness' and consistent delivery of care. Moreover, although standards and setting standards have produced positive outcomes in some areas of nursing practice (CQC, 2015), this approach has produced mixed success, particularly when care is standardised to achieve targets (Hewison and Sawbridge, 2011), reinforcing a clinical reality that standardising practice does not always produce a desired professional response and positive patient outcomes.

Given these findings, a key theme to emerge is the professional tension created by the need to measure outcomes and the means by which care is delivered to achieve outcomes. These findings are significant, as outcome-driven care does not take into account the processes of *how* health care professionals meet outcomes, despite this being a clear commissioning objective (CQC, 2014). Furthermore, the problem of 'using guidelines' in clinical practice, reported 'barriers' and problems with maintaining 'quality of care', further highlight contributors of professional tension. Therefore, there is a need to explore further how the standardisation of nursing care delivery affects health care workers' behavioural intentions in implementing care.

1.4 Understanding the intentions behind instrumental research utilisation

Health care professionals and workers are continually exposed to new research findings and products. However, there is continued uncertainty as to how individuals respond behaviourally to using research which can often result in a lack of application or adherence (Godin *et al*, 2008). The use of psychological theories could help to explain *why* and *how* research products are utilised, as perceptions of factors such as resource constraints and organisational policy are key determinants in their actions (Walker *et al*, 2003). To this end, social cognitive theories have been used to explain why and how individuals form judgements and an intent to perform an action (Michie *et al*, 2005), at the same time tapping into the internal psychological structures of the mind to explain behaviour (Eccles *et al*, 2005).

The premise for the use of psychological models is based on the belief that if we are to change behaviour we need to understand not only the external factors that affect behaviour (identified by organisational models and pragmatic factors) but also the internal structures, which are represented by an individual's thoughts and cognitions, and how this relates to an individual's thinking (Grimshaw *et al*, 2001, Eccles *et al*, 2005). Furthermore, accessing an individual's thinking is important as it helps to target aspects of behaviour which can be modified, an important driver for successful behaviour change strategies (Walker *et al*, 2003), which could help to provide further explanation for individual instrumental research utilisation activity.

Intention is a psychological construct which explains conscious, planned decisions and has been defined as:

“Indications of how hard people are willing to try, or how much effort they are planning to exert, in order to perform a behaviour” (Ajzen, 1991:181).

Intention, unlike behaviour, is not a directly observable phenomenon. Godin *et al* (2008:2) describe the activity of intentional cognition as ‘processes of thought intervening between observable stimuli and responses in real world situations’, thus intention is viewed as being in close proximity to behaviour or as a proximal measure of behaviour. As a proximal measure the validity and relevance of the construct in explaining behaviour has been tested. In support of the construct as a proximal measure of behaviour, several studies (Godin and Kok, 1996; Armitage and Conner, 2001; Sheeran, 2002) have demonstrated that intention can explain on average significant proportions of behaviour. In a variety of health related behaviours including exercise, healthy eating, sexual health and smoking cessation approximately 33% variance in these behaviours can be explained by intention. In support of intention as a valid measure of health professional behaviour, Godin *et al* (2008) in their systematic review demonstrated that intention predicted as high as 59% of variance in actual behaviour, which is on a par and if not higher than with health related intention-based studies.

Still, the utility of intention in explaining and predicting behaviour should also be put into context. Two important factors have an influence in the usefulness of intention in explaining behaviour. Firstly, intentional decisions have a clear relevance and influence in explaining a variety of health professionals’ decision-making in documentation, use of guidelines, general clinical practice and counselling (Godin *et al*, 2008). Secondly, increasing the number of variables designed to explain intention improves the power of intention in explaining intentional behaviour (Godin *et al*, 2008). However, these

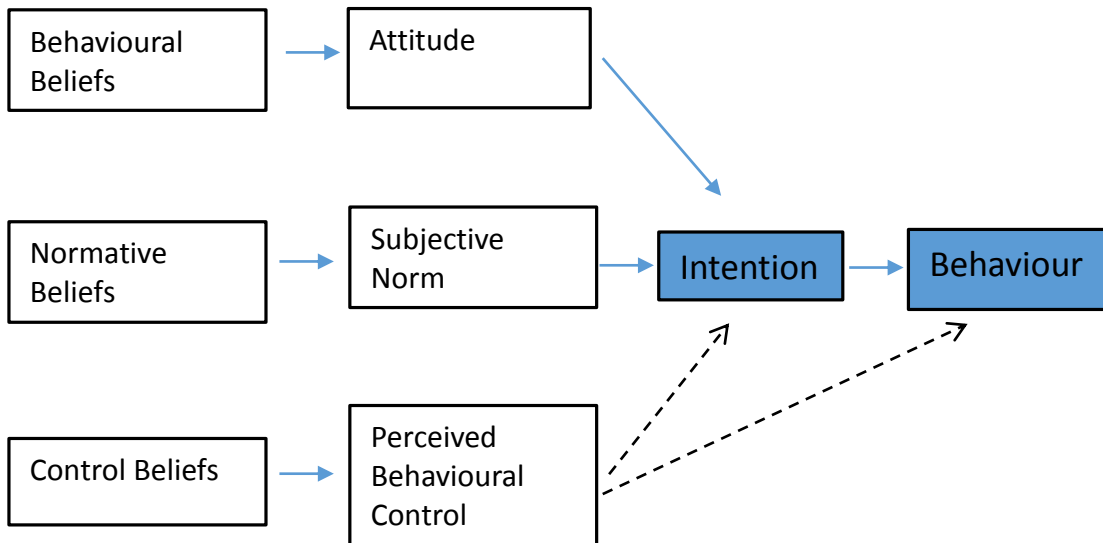
observations are limited by a narrow range of behaviours, and as intentions are likely to vary from one behaviour to the next, this highlights the limited amount of evidence available to explain health professional behaviours including instrumental research utilisation behaviour.

1.4.1 Intentional models which explain behaviour

A range of Social Cognitive Theoretical models can be utilised to explain the relationship between internal structures and behaviour (Conner, 2010). When the focus of exploration is on understanding *how* individuals form behaviours, then motivational theories should be applied to measure *intention* (Eccles *et al*, 2005; Michie *et al*, 2005), as the variables that predict intention provide a theoretical account of behaviour (Rutter and Quine, 2002). Psychological models are used as they have the advantage of being able to provide a sound and reliable platform for explaining determinants of behaviour (Ajzen, 1991). This is important as behaviour change interventions based on well-developed theoretical models can provide a reliable structure for changing clinical behaviour (Eccles *et al*, 2005). The Theory of Reasoned Action (Ajzen and Fishbein, 1980), The Theory of Planned Behaviour (Ajzen, 1991), Theory of Interpersonal Behaviour (Fishbein, 2008) and the Attitude, Social Influence and Self-Efficacy model (DeFries *et al*, 1998) are all examples of theoretical models of intention.

The model illustrated below depicts the Theory of Planned Behaviour, which has been the most used model of intention to explain health carers' intentional behaviour (Godin *et al*, 2008).

Figure 1: The Theory of Planned Behaviour (Ajzen, 1991)



The central proposition of the model is that if an individual has control over performing a behaviour, intention is the immediate determinant of behaviour (Ajzen, 1988). When an individual has control over a behaviour then planned, volitional decisions are made as intentional decisions, as people usually behave in a rational manner, taking into consideration the consequences of their actions (Ajzen and Fishbein, 1980). This type of decision-making is also recognisable as a professional requirement (NMC, 2015) and also in instrumental research utilisation as part of a deliberative process (Strandberg *et al*, 2014), demonstrating the relevance of the model in explaining behaviour.

The model also stipulates that many behaviours are not under an individual's volitional control, recognising that decision-making is non-motivational as well as motivational (Ajzen, 1988). In the original conceptualisation of the TPB, Ajzen (1988) related the perceived difficulty in performing a behaviour to resources, opportunities, barriers and

past experiences. Again, much of what is understood as barriers for health professionals' has been identified in these areas, ranging from organisational, behavioural and contextual factors (Meijers *et al*, 2006; Rycroft-Malone *et al*, 2009; Cummings *et al*, 2013; Weng *et al*, 2013), which reports the importance of control in professional decision-making. However, applying the TPB model can help explain how such barriers directly affect intentional decision-making, and the degree to which instrumental decision-making is volitional or external to the health professional.

In intentional models, theoretical predictors of intention are referred to as 'determinants' or intermediate variables (Levin, 1999; O'Boyle *et al*, 2001). Determinants of intention are predicted by beliefs, based on an individual's evaluation of the outcome of the behaviour and the strength of belief associated with this outcome, and this is typical of all variables in the model. Importantly, in the TPB, beliefs that help individuals form intentions are specified as salient beliefs. The salience of beliefs represents the most dominant or most influential beliefs related to a specific behaviour (Francis *et al*, 2004), thus intention is said to represent the dominant thinking at one point in time. This should be considered important as it provides a framework as to what type of beliefs represent and do not represent the formulation of intentional decisions, a characteristic and strength of theory-based models, as it is clear which concepts have been tested to understand the findings from a theory (McKenna, 1997). Using intentional models also helps to get to root cause explanations of attitudes, subjective norms and control of behaviour. This is important, as, for example in nurses' research utilisation behaviour, although attitudes, colleagues and context are recognised as important individual variables in understanding research utilisation

behaviour, there is a lack of theoretical context to how these variables affect the formulation of behaviours (Squires *et al*, 2011).

Intentional models are described as predictive models of behaviour (Francis *et al*, 2004). The direction of prediction is thought to flow in one direction, in that intention is the best predictor of behaviour, and the determinate of intention tells us what element (or combinations of elements) are the best predictors of intention (Ajzen, 1991); whilst, the beliefs that underpin determinants of intention tell us *why* a person holds that intention. It is unusual to see this pattern broken, thus it is not expected that attitude would have a greater effect on behaviour than intention (Ajzen, 1988). Thus, there should be a linear or multi-linear relationship between the variables contained within intentional theoretical models. Intuitively and empirically, this also makes sense, as predictor variables (attitudes, subjective norm, and PBC) are formed through judgements, and are unlikely to be formulated without conscious thought; particularly in health professional decision-making which has been shown to be underpinned by rational decision-making (Thompson *et al*, 2001; Rycroft-Malone *et al*, 2009; Strandberg *et al*, 2014).

A further perceived advantage of intentional models is that individual and contextual variables such as age, gender and environmental factors are considered external; only having an indirect effect on intention through the formation of attitudes and norms (Ajzen, 1991). This is thought to be important as the model can be applied in a variety of contexts regardless of differences in demographics (Ajzen, 1991). This also illustrates the advantages of applying intentional models of behaviour over multidimensional organisational models in which individual and contextual factors often vary. This has

some empirical support, as socio-demographic variables, particularly, have been found to have very little influence on a health professional's intention (Godin *et al*, 2008).

As intentions are thought to vary from one behaviour to the next and are very much 'time specific' (Francis *et al*, 2004), this could be seen as a limitation, particularly as health professional practice is complex and made up of a multitude of behaviours. Nevertheless, as behaviour change interventions are more effective in targeting specific behaviours (Baker *et al*, 2010), identifying modifiable factors as a focus for changing individual's intentions and their practice, conversely should be seen as an advantage. Therefore, to help focus tailored interventions we need to know 'intentions' for specific behaviours.

1.4.2 Current understanding of health professionals' IRU

Health professionals' intentional behaviour has received increasing attention over the last decade. Theoretically-based social cognitive psychological models, such as the Theory of Planned Behaviour (TPB), have provided a reliable platform for exploring deliberative behaviour, and attitudes and beliefs which influence an individual's behaviour (Godin *et al*, 2008).

Godin *et als'* (2008) systematic review established that health professionals do make intentional choices as part of their professional behaviour and intentional models can capture and predict large proportions of behaviour. Therefore, continued application of intentional models in understanding behaviour is important, as this will provide a valid insight and reliable structure for understanding and changing clinical behaviour (Murphy

et al, 2014). Furthermore, it is also more likely that theory-based information can provide more generalizable solutions to changing behaviour (Murphy *et al*, 2014).

However, despite an emerging understanding as to how intention could provide a valuable insight into health professionals' research utilisation behaviour, there is a need to develop our understanding of the role of intention and predictor variables of intention when applied to specific research utilisation behaviours. Essentially, this is because we know that intentions can vary from one behaviour to the next, and can be influenced by a variety of factors.

There have been some empirical studies that have explored health professionals' research utilisation behaviour (Nash *et al*, 1993, Perkins *et al*, 2007; Godin *et al*, 2008). However, this has not provided a sufficient and consistent insight to explain how and what influences how nurses' and health care workers' form intentions when using guidelines in clinical practice.

Previous reviews of intentional behaviour have focused on general health professional behaviour. Perkins *et al's* (2007) systematic review focused upon exploring health professionals' general behaviour within the context of one type of motivational theory – The Theory of Reasoned Action. Similarly, Godin *et al's*, (2008) systematic review explored the explanatory value of a range of social cognitive models (e.g. Theory of Reasoned Action, Theory of Planned Behaviour) on general health professionals' behaviour. Therefore, there is a need to discover how intentions are formed when different health care workers are faced with using clinical guidelines and protocols, as a

means of standardising their delivery of practice. Furthermore, the continued uncertainty regarding the influence of intention to underpin effective evidence-based practice has become more imperative given recent concerns regarding the standard of care provided with the caring professions.

1.5 The Focus of this research

Therefore, the focus of this research was to develop understanding of how health professionals' form and make intentional decisions when using research products in clinical practice. To develop the conceptual understanding of intention, as applied to the use of research products in clinical practice, broad aims were identified at the outset of the study.

1.6 Broad aims

Broad aims focused on making a contribution towards understanding nursing practice decision-making when using research in clinical practice, with a view to:

- Making a further contribution to explaining the research to practice gap
- Exploring 'intention' as a psychological explanation for bridging this gap

The next phase of the study set out to explore the evidence-base underpinning health professionals' intentional research utilisation behaviour, to provide a sound empirical foundation for this study.

CHAPTER 2: SYSTEMATIC REVIEW

A critical review of background literature established the need to understand further the role of intention as a social psychological explanation for instrumental research utilisation behaviour. The following pages describe and discuss a systematic review of health professionals' intentions to use products of research in their practice; providing an empirical foundation for further study.

2.1 The need for a review of the literature

Over the last 15 to 20 years implementation research has identified important barriers and facilitators to changing practice. Multiple pragmatic dimensions, individual attitudes and beliefs, and theoretical frameworks of behaviour have added and provided direction for exploring implementation behaviour. However, there is still a need to explore the empirical evidence to explain health professionals' intentions when 'products of research' are used to guide practice.

Empirically, previous reviews of intentional behaviour have explored general health professional behaviour and not specifically instrumental research utilisation behaviour. Perkins *et al's* (2007) systematic review focused upon exploring health professionals' *general behaviour* within the context of one type of motivational theory – The Theory of Reasoned Action. Similarly, Godin *et al's* (2008) systematic review explored the explanatory value of a range of social cognitive models (e.g. Theory of Reasoned Action, Theory of Planned Behaviour) on *general health professionals' behaviour*, although this

included very few studies that would fit the definition of instrumental research utilisation.

However, no review (of any methodology) has been conducted to explain a health professional's intention to use products of research to guide their practice. Thus, there is a need to systematically scrutinise the available literature using reliable review processes and methods to address this area of research.

2.2 Operational definitions: intention and intentional behaviour

Intention represents an individual's planned and rationalised decision to carry out a behaviour (Ajzen, 1991). Intentional decisions are referred to as 'intentional behaviour' or just 'intention' (Ajzen, 1991). In effect these two terms share the same meaning.

In all studies, a form of research utilisation behaviour is identified. In some studies, only the intention to carry out that behaviour is reported. In other studies, intention and the relationship with behaviour is also measured. In approximately half of the studies the relationship between intention and behaviour is not analysed because intention is considered to be a reliable proximal measure of behaviour (Eccles *et al*, 2006). In very few studies an individual's 'actual behaviour' is also measured for a comparison with intention. This conceptual understanding of intention applies to all models of intention identified in the review.

For clarity, in this review the instrumental research utilisation behaviour will be clearly stated. At all times, the term 'intention' will be used to refer to an individual's

intentional behaviour. If a study has not reported the relationship between intention and behaviour, this will be recorded as missing. Actual observed behaviour (if reported) will be referred to as 'actual behaviour'.

2.3 The review

2.3.1 Aim

The overarching aim of this study was to explore health professionals' intentions to using products of research in clinical practice; in relation to *instrumental* definitions of research utilisation behaviour, through addressing the following:

- Are there professional differences or similarities in intentional instrumental research utilisation behaviours?
- Are there other influences on intentional behaviour in addition to those explained by social cognitive model variables?
- In which circumstances is intention a powerful predictor of instrumental research utilisation behaviour?
- Is there a consistent pattern of determinants of intentional instrumental research utilisation behaviour?

2.3.2 Methodological objectives

The main methodological objectives were to review empirical evidence using well established review methods, in order to provide clear answers to the main review aim.

Methodological objectives were:

- To develop a systematic search strategy to search for, acquire and select primary empirical evidence relevant to the review questions and aim

- To subject selected literature to a rigorous appraisal of methodological quality using appropriate tools
- To draw conclusions as to the current status and quality of evidence relating to the review question, to make a further contribution to the field

2.4 Design

The design of the review was driven by the need to follow systematic processes and also to provide a narrative interpretation of collective outcomes across studies. PRISMA guidelines were used as a guide for the systematic review of studies (Moher *et al*, 2009). Popay *et al's* (2006) guide to narrative synthesis was used to integrate and interpret key findings across empirical studies.

2.4.1 Search methods

The main literature search involved a focused electronic search on key health related databases, these included the BNI (British Nursing Index) 1985 to October 2011; HMIC (Health Management Information Consortium made up of 2 databases DH-data Department of Health's Library and Information Services, and King's Fund Information and Library Service) 1983-October 2011; PsycINFO (database of abstracts of psychological literature) 1806-October 2011; CINAHL (Cumulative Index of Nursing and Allied Health Literature) 1981-October 2011; MEDLINE (Medical Literature Analysis and Retrieval System) 1950-October 2011 and the Cochrane Library to October 2011. All databases were accessed via NHS Evidence (www.library.nhs.uk). (Appendix A).

2.4.2 Search Strategy

Database searching was developed in conjunction with an information specialist. As not all databases use the same controlled vocabulary, different search terms were used as applicable. Both free-text and thesaurus terms specific to each database were used to create a maximally sensitive search strategy. Terms were combined using the Boolean AND/OR and where appropriate truncation (*) was applied to retrieve variations on a word stem. The following are examples that represent the population, exposure and outcome: (nurs*): title, abstract, keyword and (evidence or research): ti,ab,kw and (attitude* or inten* or engag* or motivat* or "perceived social norm*" or "social behaviour" or "social behavior" or "peer pressure*" or determinant near/5 behaviour* or determinant near/5behavior*):ti,ab,kw. Both UK and US terminology were utilised for the search. No date limits were applied, to maximise search by date. Hand searching and referencing chaining for relevant empirical studies (for sake of consistency) stopped when electronic searches were completed.

The initial search strategy was carried out in January 2014. A final search strategy in May 2015 identified the final number of primary studies which matched the inclusion criteria. The final search strategy also involved scanning specialist journals in Implementation Science.

2.4.3 Inclusion criteria

The inclusion criteria for study selection were influenced by the review question and associated aims of the review. Primary empirical studies were included if they clearly related to Health Professionals' intentions to use research products directly in their

practice. Only studies which measured intention through theoretical models were included.

2.4.4 Exclusion criteria

Systematic Reviews are strengthened by providing a rationale for exclusion criteria. Studies that did not meet the inclusion criteria in Table 2 were subsequently excluded.

2.4.5 Search Outcome

The screening/filtering process involved 3 stages. A review of 3244 citations identified 462 duplicates leaving 2767 citations. Titles and abstracts were then reviewed by two reviewers (BA and CJR) who applied the inclusion criteria. Any discrepancies were resolved through discussion. Full copies of the 32 papers were retained which met the inclusion criteria based on the abstract, of which 18 met the inclusion criteria for the review.

Table 1. Inclusion criteria for empirical studies

Studies were accepted that met the inclusion criteria according to participants, types of exposure, type of behaviour, study design and language.

Participants: Health professionals such as nurses, doctors, physiotherapists, midwives, radiographers, speech and language therapists and health personnel undertaking instrumental research utilisation activities such as health care support workers or laboratory workers.

Exposure: Primary empirical studies that clearly measured intentional instrumental research utilisation behaviour delivered in practice.

Outcome: Primary empirical studies must measure a recognised activity of instrumental research utilisation in relation to clinical practice such as: use of clinical guidelines, protocols or decision-aids.

Design: Primary empirical studies that measured instrumental intentional behaviour. These could include a variety of designs with the predominant design being observational, descriptive analytical studies.

Language: Published articles in English

Table 2. Exclusion criteria of empirical studies

Studies with any of the following elements were excluded from the review.

Participants: Studies that did not focus on health professionals or health personnel. Studies were excluded if the focus was on non-health professionals and students, regardless of student degree programme.

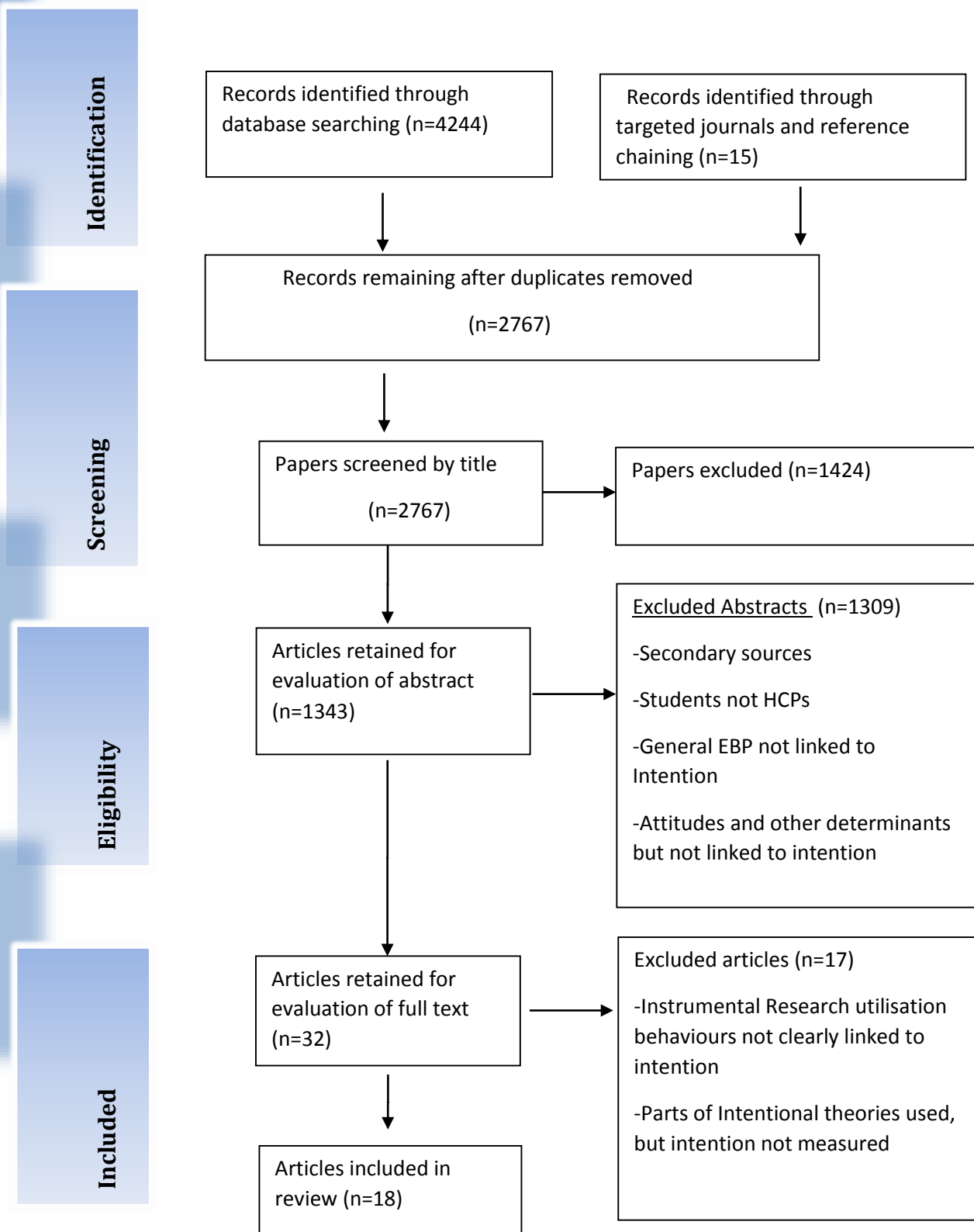
Exposure: Empirical studies that did not measure intention. Empirical studies that measured determinants of instrumental research utilisation intention (e.g. attitude, social pressure) but did not relate this to intention were excluded.

Outcome: Primary empirical studies must measure a recognised activity of instrumental research utilisation behaviour in relation to clinical practice. Empirical studies were not included if intentions were not clearly linked to a research utilisation activity.

Design: Non-empirical studies. Any opinion based articles without an empirical method were excluded. Secondary evidence (any type of review) was also excluded as the choice of synthesis precludes the integration of primary and secondary evidence.

Language: Published articles, languages other than English

Figure 2. PRISMA Flow diagram, based on inclusion and exclusion criteria



2.4.6 Quality Appraisal

Consideration of the quality of the empirical literature was not a central focus for inclusion of studies for the review. However, critical appraisal of strengths and weaknesses of included studies was necessary for the synthesis of literature. All of the studies identified were quantitative analytical surveys, in which the checklist by Maltby *et al*, (2010) and CASP (Public Health Resource Unit, 2006) were utilised to appraise methodological quality.

2.4.7 Data Extraction

A data extraction form was developed to help understand the features and strengths and weaknesses of included studies. The data extraction form was designed from early scrutiny of identified hand searched intentional research utilisation articles. No scoring system was applied as studies were not specifically chosen for their 'quality', but for their relevance to addressing the research question; thus some studies were weak methodologically but also relevant. (*Appendix B*).

2.4.8 Narrative Data Synthesis

The aim of data synthesis was to narratively interpret health professionals' intentional research utilisation behaviour. Narrative synthesis as described by Popay *et al* (2006) was used to interpret and integrate quantitative primary empirical studies. These methods of synthesis can be used when included studies differ in health professional characteristics and quality, and when other integrative methods such as best evidence synthesis and meta-analysis are not possible (Dixon-Woods *et al*, 2004).

Popay *et al* (2006) describe 4 stages of synthesis (*Appendix C*). In this review three of the four stages of synthesis (Popay *et al*, 2006) were utilised. The first stage involves developing a theory; this was not used as this was not a study objective. The following stages were utilised:

Stage 1: Developing a Preliminary Synthesis, this involved interpreting main outcomes of included studies

Stage 2: Exploring the relationship within and between studies, this involved grouping studies with similar outcomes

Stage 3: Assessing the Robustness of the synthesis, this involved reflecting on the value of synthesis methods in relation to the development of key findings

To help make sense of the range of data across included studies, tabulation and grouping and clustering were utilised. Tabulation produced a data extraction table to identify key characteristics across included studies. The activity of grouping and clustering helped to identify similar results between studies. Using this approach, the main author and colleague firstly identified key outcomes (*Appendix D*). Then, key outcomes were condensed into groups, which involved interpreting the meaning of similar outcomes into groups (*Appendix E*). Braun and Clarke (2006) view the interpretation of key study results into themes as an inductive process of interpretation. This is judged to fit well with the development of themes in a narrative synthesis, and is recommended to help summarise data as part of thematic analysis (Popay *et al*, 2006). This process produced the following themes represented as groups:

Group 1: Theoretical intentional variables as dominant predictors of intention and intention of behaviour

Group 2: Differences in how health professional groups form intentions

Group 3: Competing explanations for the prediction of intention

Study results in each group were then tabulated (*Appendix F*). Tabulating results helped to identify the main quantitative results in each group. Five tables were developed that reflected the groups 1-3, Group 2 had two tables based on explaining behavioural differences by profession and behaviour.

2.5 Results

2.5.1 Theoretically based variables as dominant predictors of intention and behaviour

2.5.1.1 Attitude

In intentional models attitude is either measured directly (a person's overall attitude, for example are they in favour of carrying out a behaviour) or indirectly often referred to as 'behavioural belief' (a person's beliefs which helps to form an attitude) (Francis *et al*, 2004). Attitudes are thought to influence intention and do not have a direct effect on behaviour (Ajzen, 1991). Findings were discussed in relation to the dominant measure of attitude reported in each study.

Attitudes were a dominant predictor of intention in a range of behaviours, including infection control (Nurses' glove use), providing educational advice (Practice Nurses' Smoking cessation advice), antibiotic prescription (Surgical Physicians), delivering interventions (Dentist's placing preventative fissure sealants) and assessment

(Physicians' C Spine and CT Head rules). Nurses' attitudes towards glove use were strong predictors of intention, wherein a positive attitude was thought to be mediated by the perceived risks of not wearing gloves – particularly when handling blood products (Watson and Myers, 2001). Similarly, Practice Nurses demonstrated a positive attitude toward the planned delivery of new smoking cessation guidelines ($t = -7.36$ $P < 0.001$), when compared to Nurse Practitioners (Leitlen *et al*, 2011). However, Practice Nurses reported considerably more dissatisfaction with current guidelines when compared with Nurse Practitioners. Noted limitations of this study were the absence of reported response rate, and a high number of missing questionnaire values (>20%) which were not appropriate for analysis (Leitlen *et al*, 2011).

Surgical Registrars reported a positive attitude toward using antibiotic guidelines, in which the 'usefulness' of the guideline influenced their attitude. However, in this study the increased focus on the measurement of 'attitude' (with increased number of items as opposed to others) may have resulted in the higher correlation ($r = 0.86$) with attitude (Limbert and Lamb, 2002). Physicians also demonstrated positive attitudes (Beta=0.4 $P < 0.001$) towards the implementation of two decision-aids C-Spine Rule and CT Head Rules, although positive attitudes were only carried through beyond intention to actual behaviour for C Spine Rule (Perez *et al*, 2014). As suggested by Perez *et al* (2014) constructs outside of TPB could explain CT Head Rules, as attitude as intentions were not carried through beyond intention into actual behaviour.

Dental Practitioners high intentions were significantly predicted by the belief of favorable outcomes (Beta 0.29 $p = 0.01$) when simulating the placing of preventative

sealants (Bonetti *et al*, 2010). Similar beliefs regarding risk perception (Beta 0.27 P=0.01), and outcome expectancies (Beta 0.30 P=0.01), supported the predictive value of attitude-based constructs with intention (Bonetti *et al*, 2010).

Establishing a pattern as to how attitude influences intention is difficult, as intentions normally correspond to specific target behaviours (Francis *et al*, 2005). However, all attitude constructs indicated positive perceptions in reducing risk of cross-infection (Watson and Myers, 2001); improved educational guidance (Leitlen *et al*, 2011); usefulness of guidelines (Limbert and Lamb, 2002); and reducing risk as a preventative intervention (Bonetti *et al*, 2010).

2.5.1.2 Subjective Norm

Subjective Norm (the influence of where and with whom you work) for physicians had varying effects on intention for different behaviours. Godin *et al* (1998) reported that physicians were 14 times more likely (odds ratio 14.61 P=<.0001) to wear gloves as an expected professional behaviour, when in contact with blood or body fluids. Limbert and Lamb, (2002) discovered that junior medical doctors expected to implement acute asthma guidelines were significantly influenced by professional colleagues (r=0.74 P=<0.001). By contrast, in the same study, senior doctors' intentions were less influenced by professional colleagues, which perhaps could be an indication of greater professional autonomy or intellectual independence.

Anaesthetists (Beatty and Beatty, 2004) intentions were significantly influenced by their normative beliefs (mean 67.9%) of violating pre and post procedure safety guidelines

(pre-op visits, cockpit checks, silencing alarms) (Beatty and Beatty, 2004). Values of R^2 indicated that subjective norm for all safety checks were statistically significant ($P < 0.05$), and were robust enough to be examined as components for future intervention (Beatty and Beatty, 2004). The sampling frame also indicated small demographic differences to the target population, despite the self-selective sample (Beatty and Beatty, 2004). Subjective Norm, again was also a significant predictor of physicians' intention ($r = 0.26$ $p < 0.001$) when using assessment decision rules in the emergency department (Perez *et al*, 2014), which could suggest the influence of colleagues in specific departments.

Foy *et al* (2005) also discovered that Subjective Norm was a powerful predictor of nurses' intention when referring patients for an induced abortion ($r = 0.52$ $P < 0.01$). Subjective Norm as in reaching professional agreement was an important motivator, despite personal beliefs. Similarly, Practice Nurses were 56.2% more likely to adopt new smoking cessation guidelines, partly influenced by their colleagues. However, in the same study this did not apply to Nurse Practitioners who had low intentions.

Kortteisto *et al* (2010) internet-based cross-sectional survey in Finland reported that Nurses' intentions to use any type of patient-specific guidelines in clinical decision-making were mainly influenced by professional colleagues (Beta= 0.33 $P < 0.001$). Influence from professional colleagues also included other health professional groups, although their professions were not identified. Only 29% of the sample of Nurses responded which questions the representativeness of the sample.

Again, across behaviours it is difficult to pinpoint a pattern and the reasons as to why professional colleagues have an impact on intentions. Some studies indicate that in some departments and professional groups (Beatty and Beatty, 2004; Perez *et al*, 2014) health professionals are more conscious of colleagues' opinions and this has an effect on intention. Kortteisto *et al* (2010) internet-based study suggests that nurses in Finland are significantly influenced by colleagues.

2.5.1.3 Perceived Behavioural Control

The Perceived Behavioural Control (PBC) and control beliefs represent the stated difficulty in performing behaviour (Ajzen 1991). The difficulty in performing guideline-driven behaviour appears to be a key factor for nursing staff, in which five of the seven studies report PBC as a significant predictor of intention across different types of behaviour, environment and grades of nurses.

Practice Nurses offering smoking cessation advice (guided by the National Service Framework), reported 'time pressures' as significant influences on intention when working to timed appointments ($r=0.546$, $P<0.001$) (Puffer and Rashidian, 2004). O'Boyle *et al* (2001) and Levin (1999) reported the problem of skin irritation for critical care nurses following hand-washing guidelines, whilst the practicalities of cost (as a controlling factor) for sexual health nurses supplying contraceptives in an abortion clinic (R^2 0.15) was also a significant predictor (Foy *et al*, 2005). These findings indicate that for some behaviours pragmatism determines intentional choice and outweighs the use of guideline-driven evidence. Maue *et al's* (2004) study on guideline compliance also illustrated that advanced practice nurses perceived barriers ($r = - 0.73$, $P < 0.001$) had a

negative effect on intention. Though, the proportion of nurses in the sample is not clear and the same result applies to physicians.

Physicians' intentions to implement general patient specific guidelines in clinical decision-making were influenced by PBC (Beta 0.45 $P < 0.001$) (Kortteisto *et al*, 2010). Questionnaire items were enhanced by content derived from earlier studies, and previous Finnish national documents (Kortteisto *et al*, 2010). This said, elicitation studies were not conducted to help develop representative content for belief-based questionnaire items. Buenestado *et al*, (2013) also established that the context in which computerised asthma guidelines were implemented effects physicians' intention $r=0.89$, although the sample was limited to eight paediatricians.

2.5.1.4 Intention and the association with behaviour

Of the nine studies that investigated the relationship between intention and behaviour seven studies measured self-report behaviour. For nurses, intention was a significant predictor of self-report behaviour in glove use ($r=0.47$ $P < 0.01$) (Levin, 1999) ($r=0.69$ $P < 0.01$) (Watson and Myers 2001) and adherence to hand hygiene guidelines ($r=0.63$ $P < 0.001$) (O'Boyle *et al*, 2001) (Beta 4.53 $P < 0.001$) (Jenner *et al*, 2002). Intention was not a significant predictor of general guideline use ($r=0.13$ $P < 0.01$) for Advanced Nurse Practitioners (Maue *et al*, 2004).

For physicians, universal precautions to venepunctures ($r=0.50$ $P < 0.001$) (Godin *et al*, 2000); adherence to asthma and antibiotic guidelines (Limbert and Lamb, 2002) and adopting a C Spine Rule (Odds Ratio 1.79 $P < 0.01$) were all positively associated with

intention. Although, intention was not a significant predictor of general guideline use ($r=0.13$ $P<0.01$) for physicians (Maue *et al*, 2004).

Mostly, the proportion of variance captured in these studies was over 28%, which is typical of the proportion of variance captured by intention (Godin *et al*, 2008). Although, studies have also shown that self-report intentions are not always carried through to actual behaviour (O'Boyle *et al*, 2001). Thus saying 'X' and doing 'X' cannot be relied upon.

2.5.1.5 Differences and similarities in how health professional groups form intentions

Differences in intentions across professional groups for the same behaviours were identified by organising dominant predictors of intention by profession. (*Appendix F*)

Nurses and physicians form intentions in different ways when using gloves as guidance for infection control. Godin *et al* (1998) identified that when wearing gloves is the accepted behaviour amongst physicians, there was a 14.61 greater odds of high intention to wear gloves. In this example, physicians' behaviour could suggest that uniform behaviours within the medical profession are important and promote a strong subjective norm towards intention.

By contrast, nurses' intentions towards wearing gloves can have different influences. Levin (1999) established that nurses' and laboratory workers' perceived control and attitude rather than subjective norm were key predictors of intention for glove use. Similarly, Watson and Myers (2001) established that attitudes (R^2 0.63 $p<0.01$)

explained a large proportion of nurses' glove use behaviour. These examples indicate that peer pressure and the working environment have different effects across professional groups when performing similar behaviours. However, this suggestion should be tempered because these studies were performed in different environments.

Differences in how nurses' and physicians' form intention were also identified for general guideline use. Kortteisto *et al* (2010) highlighted that subjective norms were key determinants to general guideline use for Finnish nurses. In the same study, the dominant determinant for physicians was PBC (Beta 0.45 P = <0.01) (Kortteisto *et al*, 2010).

Different determinants of intention were evident when nurses performed the same behaviour. O'Boyle *et al* (2001) and Pessoa-Silva *et al* (2005) identified the perception of control and ability to perform hand hygiene important. Whereas, Jenner *et al* (2002) reported the nurse's responsibility as a driving factor for intention.

By contrast, nurses and physicians often share similar determinants of intention for some instrumental research utilisation behaviours. The usability or usefulness of a guideline can affect both the PBC and attitudes of nurses' and physicians' (Bolman *et al*, 2002; Limbert and Lamb, 2002). These results indicate that the content and clarity of the guideline being used can have similar effects on how professionals' form intentions.

2.5.1.6 Competing explanations for the prediction of intention and behaviour

Competing explanations (*Appendix F*) represent variables added to intentional models to explain their effect on intention, behaviour or both intention and behaviour. Some studies report the direct effect on intention other studies the effect on behaviour. Additional variables are added as previous research often has identified other variables which could explain health professionals' intentions or behaviour in addition to theoretical model variables.

Eleven of the eighteen studies included in this review added variables to established theoretical models. Many of these variables were pragmatic and intertwined with the clinical behaviour. For example, O'Boyle *et al* (2001) and Jenner *et al* (2002) recognised that 'time availability', 'intensity of activity' and 'the number and location of sinks' could mediate health professionals' hand washing behaviour, and potentially override intentional choices. Likewise, other studies included personal factors related to the behaviour such as nurses own smoking behaviour when introducing smoking cessation guidelines (Bolman *et al*, 2002) and or personal responsibility in hand hygiene (Jenner *et al*, 2002) and factors related to the guideline itself such as perceived simplicity (Bolman *et al*, 2002) and satisfaction with current guidelines (Leitlen *et al*, 2011) when compared with the introduction of new guidelines.

Other variables were theory-driven (habit) and recognised that behaviour is not always driven by intentional choices but by practised behaviour (Beatty and Beatty, 2004; Bonetti *et al*, 2010; Buenestado *et al*, 2013). Thus, there is increasing recognition that intentional behaviour is better understood by adding discrete (and relevant) variables

for a more holistic understanding of intentional behaviour, for which there is some supporting evidence.

O'Boyle *et al*, (2001) identified that 'observed intensity of activity' interfered with intentions to comply with hand washing guidelines ($r=-0.32$ $P<0.05$). O'Boyle *et al* (2001) hypothesised that despite having good intentions to comply with hand hygiene practices (control beliefs), actual behaviour was influenced by the realities of clinical practice (O'Boyle *et al*, 2001). Perceived simplicity ($r=0.65$ $P<0.01$) was also the best predictor of intention when nurses were expected to use smoking cessation guidelines (Bolman *et al*, 2002). Jenner *et al* (2002) also reported personal responsibility as the strongest predictor of intention ($r=0.42$ $P<0.01$) for compliance with hand hygiene. Thus, there is significant statistical support for the inclusion of additional variables to better understand intention.

Maue *et al* (2004) identified that perceived barriers ($r= -0.73$ $P < 0.001$) constituted confidence; understanding and practice habits were negative contributors for general guideline compliance; external barriers (although not a dominant barrier) were also reported as significant ($r=-0.47$, $P<.006$). However, positive practice habits were significant in predicting dental practitioners' intentions (Beta 0.59 $P=< 0.001$) and behaviour (Beta 0.35 $P=< 0.001$), in which positive attitudes correlated with resulted practised behaviours. Buenestado *et al* (2013) also recognised that physicians' uptake of asthma guidelines could be related to difficulties integrating them into their actual practice.

However, not all 'additional variables' increase our understanding of intention, for example demographic and skill-based factors (age, clinical experience, patient demands) in this review did not report significant or much less statistical significant predictors of intention when compared to established social cognitive model variables (Godin *et al*, 1998; Godin *et al*, 2000; Puffer and Rashidian, 2004).

Competing explanations for the prediction of intentions have also been evaluated by incrementally adding in 'additional variables' to discover their effect on intention and model determinants of intention. For example, Watson and Myres (2001) discovered that adding 'perceived barriers' to the PBC to understand glove use behaviour, increased the explanatory power of intention by 3.5%. Similarly, Levin (1999) reported that the explanatory power of variables within intentional models can change with the addition of other relevant variables.

From studies that measured additional variables to better understand intention and behaviour it can be concluded that this approach is helpful:

- When there is a careful selection of variables in respect to the behaviour under investigation
- To establish the value of additional variables in explaining intentional behaviour

2.6 Discussion

The present study set out to understand health professionals' intentional instrumental research utilisation behaviour. The results helped to provide a platform for addressing the main *aims* of the review, and review questions.

2.6.1 Are there professional differences or similarities in intentional research utilisation behaviours?

There do appear to be differences and also similarities in intentional research utilisation behaviours across and within health professions. Making comparisons across professional groups is complicated by the range of professional groups identified, and the limited number of comparable behaviours. However, the clearest comparisons can be made between nurses and physicians, as these have been the two main health care professional populations researched.

Nurses' intentions to use gloves in clinical procedures, hand hygiene, smoking cessation and general guidelines are predominantly influenced by the perceived difficulty in performing the behaviour (PBC). These findings are supported by many studies in which contextual factors are reported as important inhibitors of clinical guideline use (Rycroft-Malone *et al*, 2009; Schultz and Kitson, 2010; Cummings *et al*, 2010). Methods are now available to help researchers identify key variables for behaviour, in which initial eliciting questions can help identify relevant variables for the specific behaviour under investigation (Michie *et al*, 2005). Dyson *et al* (2013) recently used this approach and identified that the greater the number of barriers in hand hygiene practice the more this affected compliance.

It was also established that PBC and Subjective Norm variables influence nurses and physicians' intentions differently. Across behaviours (glove use, hand hygiene, specialist guideline use) physicians were influenced by established peer practice (Godin *et al*, 1998; Limbert and Lamb, 2002; Foy *et al*, 2005). By comparison, when nurses were faced with similar behaviours, the perceived difficulty in performing the behaviour was a key determinant of intention.

However, how intentions are formed can be similar across professional groups. Foy *et al* (2005) identified subjective norm as a key determinate of intention across professional groups in abortion care. This indicates that for some behaviours, shared decision-making is a key component in helping form intentions, and is a process which complements clinical guideline decision-making (Guerrier *et al*, 2013). In nursing practice, decision-making when using protocol-based care is most often viewed as a social activity (Rycroft-Malone *et al*, 2009), which also indicates that the influence of professional colleagues' cuts across professions, particularly in discrete clinical environments.

Professional differences within professions were also discovered. For example, UK nurse's general guideline use was influenced more by overcoming practical difficulties (as a predictor of intention), compared to nurses in Finland being influenced more by professional colleagues (Kortteisto *et al*, 2010). This indicates that contextual issues in terms of 'usability' and the influence of 'leadership' in influencing intentions could be an issue. The importance of leadership and usability of guidelines are recurring themes

that have been identified as key influences in the implementation of clinical guidelines (Debouragh, 2001; Chummun and Tiran, 2008; Yousefi-Nooraie *et al*, 2014).

2.6.2 Are there any other influences on intentional behaviour in addition to those explained by model variables?

In this review it was highlighted that in many studies ‘additional variables’ are included to explain behaviour in addition to intentional model variables. It should be noted that for some authors ‘additional variables’ are seen as extensions of the PBC, whereas other authors see the same variables as being distinct from the PBC. Regardless, these variables do explain variations in intentional behaviour.

Additional variables appear to have most influence on behaviour when the behaviour is difficult to perform or behaviour is already established through practice ‘habit’ (Godin *et al*, 1998; Beatty and Beatty, 2004; Maue *et al*, 2005; Bonetti *et al*, 2010); which applies to all health care professionals.

It appears that habitual behaviour has an overriding effect on intention when behaviours are repeated. In this review, habit forming behaviours were evident in hand hygiene, glove use, pre-operative visits and safety checks. Ouellette and Wood (1998) highlight that habitual behaviour occurs when there is a tendency to repeat past behaviours in a stable context, because the same contingencies are in place (Ouellette and Wood, 1998). In this instance, behaviour is thought to come under control of stimulus cues, and the presence of these cues triggers the automatic response sequence, *bypassing cognitive processes* such as attitude and intentions (Ouellette and

Wood, 1998). Godin *et al* (2008) in their review of general health professional behaviour give empirical support to this theory, identifying habit as an important variable in the prediction of health care professionals' behaviour.

Other variables explored alongside intentional variables were less predictive. The effect of demographic factors appears to have very little effect on intentional behaviour. Only one study reported a significant effect of 'age' as a contributor to intentional behaviour; and this had limited effects in comparison to the main effect of subjective norms (Godin *et al*, 1998). This type of finding upholds the theoretical structure of intentional models in which demographic factors are not thought to directly influence intention (Ajzen, 1991).

2.6.3 In which circumstances is intention a powerful predictor of research utilisation behaviour?

Half the studies in the review did not report the relationship between intention and behaviour. It is presumed this is because intention is viewed as a proximal determinant of behaviour, and if we know the intention, then we know the likely behaviour. In this review, when the relationship between intention and behaviour was reported there was a strong statistical relationship (Cohen, 1988) between intention and self-reported glove use, universal precautions to venepunctures, hand hygiene, antibiotic and asthma guidelines, general guideline use, placing fissure sealants in dental practice and use of decision-rules.

Historically, across a range of behaviours, evidence suggests that intention can be a statistically reliable predictor of self-report behaviour, predicting a good proportion of behaviour. Godin *et al* (2008) explored a range of health care professional behaviours (one of which was guideline use) and proportioned a frequency weighted mean for intention of 59%. Their findings were consistent with previous reviews in which the relative effectiveness of intention (as a predictive construct) within the Theory of Planned Behaviour also showed good predictive values, 40% and 33.7% respectively (Godin and Kok, 1996; Conner and Sparks, 2005).

Theoretical models of intention in this review included the Theory of Reasoned Action, Theory of Planned Behaviour, Theory of Interpersonal Behaviour, The Attitude, Social influence and Self-Efficacy Theory, The I-Change Model and Technology Acceptance Model. Generally, increasing the number of variables increases the predictive value of intention. Given this, future use of intentional models should recognise the value of extending theoretical models to explain instrumental research use behaviour.

2.6.4 Is there a consistent pattern of determinants of intentional research utilisation behaviour?

Some potential patterns in terms of determinants of intention have emerged in relation to use of clinical guidelines. However, patterns only emerge in relation to certain behaviours, professional responses to certain behaviours and also in professional differences to similar behaviours across different countries. Therefore, it is suggested that health care professional intentional responses are driven by the behaviour and environment in which the behaviour is performed; *in which determinants of intention*

appear to be intertwined within the context and realities of the health professional's role and professional circumstance.

Nurses' perceived difficulties in carrying out guideline-driven clinical behaviours (conceptualised by the PBC) appear as the dominant factor determining practical behaviours such as hand hygiene and glove use. Perceived difficulties also inhibit guideline use when using more complex guidelines (Puffer and Rashidian, 2004). These examples of 'perceived difficulties' suggest that guidelines should be developed that take into consideration the nature of the nurse's role and usability of the guideline, which has been recognised as an important contextual factor (Rycroft-Malone, 2004; Brown *et al*, 2008; Chabot *et al*, 2010).

Professional differences for similar behaviours have also been highlighted (Kortteisto *et al*, 2010), which again demonstrates the influence of the professional environment in which 'role models' and 'peers' do have an impact on intentions. It could be argued that professional behaviour is influenced (or emphasised) more by professional colleagues in other European countries; however, these comparisons are made with very few studies.

Additional variables do provide significant explanations particularly when the clinical environment and practice habits influence expected guideline-driven behaviours. The measurement of habit is mostly confined to behaviours that are repeated and should be recognised when intentions are explored in clinical practice.

2.7 Limitations

This review set out to follow PRISMA guidelines (Moher, 2009) and narrative synthesis (Popay *et al*, 2006) as a guide for the systematic review. All of the processes recommended were acknowledged however there are some weaknesses that could impact on the representativeness of the review outcomes.

The narrative synthesis methodology helped to organise key outcomes of the review. In this review key outcomes were represented by variables which reported the strongest association; other variables with a weaker association were not reported (despite being statistically significant). Nevertheless, this approach does identify the key associations between determinants of intention, intention and behaviour.

The evaluation of study quality focused on a general evaluation of potential moderator factors on reported outcomes. In the process some general methodological concerns across a number of studies and their influence on outcomes were identified, for example the lack of elicitation studies to uncover beliefs, and low response rates.

2.8 Conclusions

This study is the first systematic review that has explored health care professionals' *intentional* instrumental research utilisation behaviour. As such this is an important first step in recognising how intentions are formed and intentional decisions made by health care professionals in response to a variety of guideline-driven behaviours.

Health care professionals responsible for implementing new guidelines should be aware of the dominant influences on health professionals' intentions when recommending a guideline-driven change in clinical practice. This review has established the professional role of the clinician in clinical practice as important, particularly in regards to nurses and physicians. Findings have indicated that nurses' intentions are mostly influenced by their ability to carry out the guideline-driven behaviour in the realities of the practice environment, whereas physicians' intentions are often influenced by the usefulness and relevance of the guideline and the perceptions of peers.

The review has also highlighted that intentions and determinants of intentions often have less influence than practice habits, which can be facilitative or inhibitive for all health professionals. When ingrained in practice, habits can be the dominant driving force for behaviour (Jenner *et al*, 2002; Beatty and Beatty, 2004; Bonetti *et al*, 2010; Buenestado *et al*, 2013). Therefore, when a change in practice is required it should be important to establish current practice behaviours alongside the intention to change practice.

Researchers should also recognise the best empirical approaches. Where possible it is recommended that comparisons should be drawn between intentional and actual behaviour, and relevant additional variables (including context) should be measured to increase our understanding of intention. Given that contextual factors can vary across environments and that a limited number of clinical guideline behaviours have been explored (related to intention), this will help to provide focus for future research

It should also be recognised that intentions are behaviour-specific, and can change from one behaviour to the next. Some of the guideline-driven behaviours in this review are similar, and have produced similar cross-professions intentions. There is an absence of exploring time-specific repeated guideline behaviour, an opportunity for further research.

2.9 Summary position and proposed theoretical model to explore IRU

The narrative synthesis and analysis of outcomes has identified key theoretical and professional perspectives which should be acknowledged in any future empirical investigation of health professionals' instrumental research behaviour.

2.10 Summary of key findings

- Health professionals' intentions are often different between health professional groups for the same behaviour, influenced by different determinants of intention.
- Contextual and learned (habit forming) responses can override intentional decisions.
- The relationship between intention and actual behaviour is under-explored; current outcomes (from minimal studies) identify that individual's intentions are often not carried through to actual behaviours. The challenging context of a behaviour can override intention.
- Deliberative and passive decision-making described in the conceptual understanding of Instrumental research utilisation behaviour is evident in intentional and habit concepts.
- A limited range of behaviours have been studied. As the formulation of intentions are behaviour-specific, new behaviours need to be explored to understand how this affects intentional and habit-based decision-making.
- Narrative synthesis can help identify empirically meaningful outcomes in systematic review research.

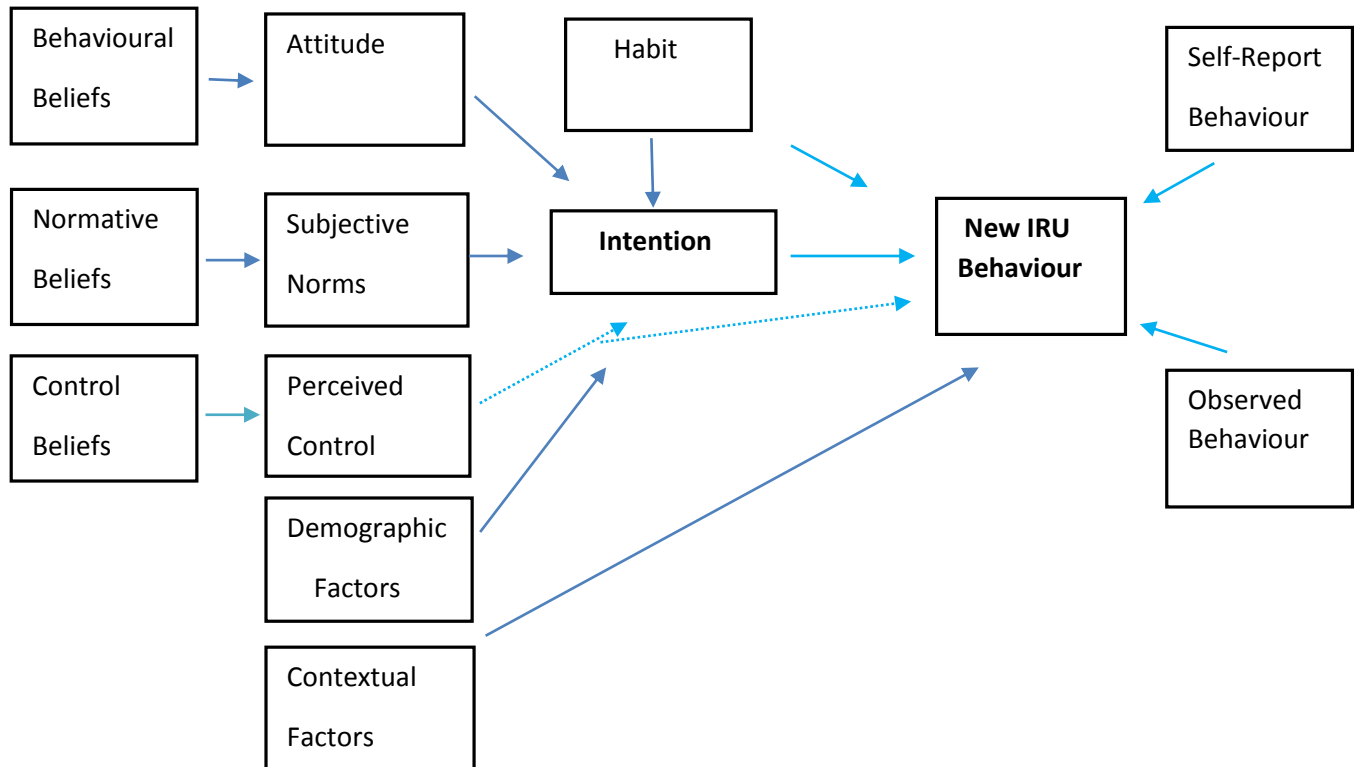
2.11 Proposed focus for new research and theoretical model

Based upon the summary of key findings future research should aim to use the proposed theoretical model in Figure 2 to explore health professionals' instrumental research activity.

The proposed model should be used to fill empirical knowledge gaps in the following areas:

- To identify new and different instrumental research utilisation behaviours; as intentions often vary from one behaviour to the next.
- To compare differences in health professionals' intentions to the same behaviour. Health professionals' intentions do vary for the same behaviours.
- To measure the context in which intentional instrumental research utilisation behaviours take place. Context can mediate intentions.
- To identify the extent perceived behavioural control (as a determinant of intention) influences new behaviours
- To conduct empirical research to develop the conceptual understanding of intentional research utilisation behaviour as an active, deliberative but also passive process.

Fig 3. Proposed theoretical model



2.12 Rationale for proposed theoretical model

From the empirical evaluation of health professionals' intentional instrumental research behaviour, the evidence supported the exploration of concepts identified in the proposed model in figure 2. These concepts are representative of the TPB model, as these were the model concepts reported to be significant in the review. For a range of instrumental research utilisation behaviours, positive associations were predicted for attitude, subjective norms, perceived control, demographic factors and contextual factors as dominant predictors of intention. Therefore, further research should

evaluate if predictive variables are dominant when applied to different behaviours, as empirically testing and evaluating any proposed model helps to validate theoretical models (McKenna, 1997).

Future empirical investigation should also focus on understanding beliefs, as beliefs help to explain intentional decision-making (Ajzen, 1991) and help also to provide a focus for interventions when used to change behaviour, an important outcome in implementation research (Eccles *et al*, 2005). Furthermore, in explaining how attitudes, subjective norms and perceived control were formed, very few studies have used recommended qualitative methods (Francis *et al*, 2004) to fully understand beliefs. This is a weakness of current research, as the narrative synthesis in this review also identified that when beliefs are fully explored this can provide a fuller explanation for intentional behaviour.

Most of the concepts identified in the proposed model are explanatory and predictive of instrumental research utilisation behaviour and are consistent with a previous review of general health professionals' intentional behaviour (Godin *et al*, 2008). The only omission from the proposed model is 'moral norm' which was not included as this was not found to be an important predictive variable of intention research utilisation behaviour. A further feature of the model is the focus on understanding beliefs, not fully emphasised in the previous model (Godin *et al*, 2008).

As the proposed model shares most explanatory and predictive variables with the earlier model (Godin *et al*, 2008) of general professional intentional behaviour, the proposed model should not be viewed as an entirely new model, but complementary to earlier understanding with a new emphasis in some areas. For example, the proposed model does place an emphasis on thorough investigation of underpinning explanatory belief-based concepts which is novel; and also classifies predictors of intention from the conceptual understanding of intention generated from the Theory of Planned Behaviour, because dominant predictive variables were generated from studies which used this model. This differs slightly from Godin *et al*. (2008) model wherein intentional variables from the Theory of Interpersonal Behaviour were proposed to explain intention. However, as variables across intentional models share the same meaning (Michie *et al*, 2005), this should not detract from the development of our understanding of intentional behaviour.

Consistent with Godin *et al*. (2008), the effect of 'context' and 'habit' were also established. Both variables can affect research utilisation behaviour, and should be included as alternative explanatory variables alongside intention. Inclusion of demographic variables however is less certain, as some demographic variables had an effect on intention independent to effects through predictor variables. This is not consistent with the understanding of the model (Ajzen, 1991), but should be considered in future design.

The narrative synthesis also highlighted that if possible, actual observation of behaviour should compare behaviour with intentions, as in the very few studies in which this has been observed there were differences between intentions and actual behaviour. It also highlighted that full empirical investigation of TPB constructs is a complex process and should be measured by a mix of qualitative and quantitative methods (Francis *et al*, 2004).

Finally, one of the key findings to emerge was the need to develop our understanding of intentional research utilisation behaviour with new behaviours and comparative populations, making the choice of guideline behaviour and the sample population important. Therefore, it was further recommended that a new guideline behaviour, potentially with a distinct behaviour pattern should be explored. This would help to add to the growing understanding of intentional research utilisation behaviour; as it has been established that intentions do vary and are specific to behaviours, a consistent theoretical finding with previous application of intentional models (Ajzen, 1991).

CHAPTER 3: IDENTIFYING A GUIDELINE TO EXPLORE HEALTH PROFESSIONALS'

INTENTIONAL RESEARCH UTILISATION BEHAVIOUR

The previous chapter reviewed evidence indicating that health professionals' intentions and predictors of intention could be different when using clinical guidelines, which could have an effect on quality of care provision. To explore and test these findings further, the 'Care Round Checklist' as a clinical guideline was identified to explore and test the contribution of 'intention' in explaining instrumental research utilisation behaviour. The following pages explored the *fittingness* of the care round guideline to evaluate instrumental research utilisation behaviour.

3.1 Local identification of a clinical guideline

The choice of clinical guideline was informed by consultation with nurse leaders at [REDACTED]. The Chief Nurse and senior nurses were interested in the potential 'added value' of intention in explaining Nurses' and Health Care Assistants' use of guidelines. The Chief Nurse identified 'Care Rounds' (*Appendix Z*) as a contemporary guideline-driven practice behaviour for which Nurses' and Health Care Assistants' intentional behaviour could be explored.

Care rounds had been implemented on all wards in the hospital for a period of 15 months. However, local evidence had suggested inconsistent implementation of the guideline across wards, despite efforts to promote its use (Crossfield and Pitt, 2012). Therefore, the Chief Nurse was supportive of the proposed research, and saw the value

of 'intention' as providing further evidence and explanation as to why care rounds, on a psychological basis, were potentially implemented differently between clinical staff and clinical area.

3.2 What are care rounds?

Care round practice is driven by guidelines or checklists that are designed to prompt nurses and health care assistants to assess essential patient needs on an hourly basis, at the same time helping to improve nurse patient communication and reduce patient isolation (Dix, 2012). Originating in the United States (US) and now widely implemented across UK hospitals (Bartley, 2011), the checklist is used to assess the "4 P's" of pain, personal needs, position and possessions, and patient contact (Meade *et al*, 2006).

Care rounds were introduced to standardise the frequency and manner in which nurses reviewed and assessed their patient's essential needs. From a quality perspective, this was viewed as critical to improving the provision of essential nursing care, patient safety and patient experience (Hewison and Sawbridge, 2011), particularly as new hospital ward environments of separate bays and side rooms often meant patients were less visible and often felt isolated (Hewison and Sawbridge, 2011). As a practice solution, care rounds also emerged as a means to reduce preventable adverse outcomes, such as falls and pressure injuries, and also to improve patient satisfaction by standardising the frequency that nurses' interfaces with the patient (Bartley, 2011). Thus, on the face-of-it, care rounds were seen as an important tool for improving patient care.

3.3 The need for acute hospital trusts to implement care rounds to promote quality care

Nurse leaders have come under increasing pressure to implement care rounds, influenced by the need to demonstrate 'quality care', and to avoid incidences of low quality care as identified in the Mid Staffs review (Francis, 2010). Implementation of care rounds were thus viewed as fundamental to raising the standards of care at the patient's bedside (Francis Report, 2013); being part of a nationally-driven initiative to improve the provision of patient-centred care (CQC, 2011; Francis Report, 2013). The continued importance of the use of care rounds was reinforced by a recent State of Care Report (CQC, 2014). This highlighted that safety issues in some trusts, such as call bells, were not being answered, and patient nutrition was falling below expected standards, which demonstrated further support for the continued implementation of care rounds (CQC, 2014).

A further need to utilise care rounds has been influenced by policy papers and political pressure. A Time for Care Review (Hewison and Sawbridge, 2011) identified the delivery of care rounds as important given the pressures created by hospital environment and staff shortages. Politically, the Prime Minister went on to call for all nurses to establish regular scheduled rounds so that essential care could be delivered consistently and patients could talk to a nurse at least every hour (Kendall-Raynor, 2012). There was, therefore, a clear emphasis on the need to use care rounds to demonstrate and measure the quality of care provision.

3.4 Implementation of care rounds

The method of local implementation of care rounds at the site of this study was reported as 'Rapid Spread' (Crossfield and Pitt, 2012). This relies upon a cascade of information to initial trainees, usually clinical leaders, and ongoing leadership at ward level to sustain the effectiveness of the innovation (Stevens and Edwards, 2012). Using this method, the implementers promoted a mass immersion event and ongoing promotion of the intervention at ward level (Crossfield and Pitt, 2012).

Current reported implementation of care rounds, particularly in the UK appears to be supported by a 'Rapid Spread' methodology (Crossfield and Pitt, 2012) and has been widely utilised in NHS Trusts as a strategy to manage change for many nursing interventions (Harrison, 2012). Some of these interventions have been effective, particularly for improved outcomes in infection control (Hartley, 2010; McIntosh, 2010; Moore, 2010). Likewise, implementation of care rounds at [REDACTED] through rapid spread was initially successful in improving patient outcomes. The number of patients being assessed within four hours for risk of falling increased by around 69%, as a result, the number of incidents where patients suffered harm associated with a fall had reduced by almost 23%, with no recorded cases of major harm during July [REDACTED] 2012). Patient feedback also improved, as patients felt more able to share concerns related to their care (Crossfield and Pitt, 2012).

However, despite positive reports, improvement in outcomes was not consistent across all areas, suggesting that individual differences in the delivery of care rounds could be affecting consistency in the delivery of care rounds. This was alluded to by Crossfield

and Pitt (2012) and suggested that feedback from across wards was 'mixed', in which some staff interpreted completion of the care round checklist as 'extra work' or 'just a tick list'. This type of interpretation could have a negative effect on care round practice and could also explain some of the differences in patient outcomes, as this may have influenced nurses' performance in the delivery of rounds; therefore, whilst patient outcomes of quality of care and satisfaction did improve at [REDACTED] this was not consistent across all areas. Implementation 'success', formally, focused on the measurement of patient outcomes and not 'performance'. Therefore, as intention is an indicator of individual performance, this revealed a gap in understanding and an opportunity to fill this gap.

Furthermore, as an organisational model of change, it is suggested limitations of the Rapid Spread method have been identified. Rapid spread implementation does not take into account individual differences and beliefs all of which can affect an individual's intention and behaviour. As stated previously, the context (social influences), mental models (beliefs about the behaviour) and the skills and confidence to perform the behaviour are all reported as valid drivers for behaviour (Michie *et al*, 2005). Paradoxically, the designer of the Rapid Spread Tool (Stevens, 2010) also highlights the importance of changing beliefs, particularly in those practice areas which are resistant to change, stating that the key to kick-starting large scale change is finding the will to change, in which "you need to change beliefs" (Stevens, 2010:2). Advocates of Rapid Spread (Garrow, 2010) also warn that this method can only be achieved if staff are motivated to succeed. However, methods of uncovering how beliefs are formed and how this might affect motivation, intention and behaviour are not discussed, further

highlighting limitations of the rapid spread change method in exploring and explaining individual behaviour.

3.5 Evidence underpinning the implementation of care rounds

The evidence supportive of the effectiveness of care rounds has mostly been measured against improving patient outcomes and patient satisfaction, which fits with an organisational objective of measuring quality. However, all primary studies and a subsequent systematic review that have generated findings have been based on quasi-experimental or observational evidence, which is not always reliable when testing the effectiveness of nursing interventions (Cullum *et al*, 2008). Meade *et al's* (2006) quasi-experimental study (the largest study evaluating the use of care rounds), compared twenty-seven units across 14 hospitals, and reported a reduction in patient falls and improved patient satisfaction. However, some of the design features and data collection processes affected the reliability of this study. For example, a rounding protocol was used to guide the intervention, although some of the pre-test measures (based on satisfaction) were different between groups which could confound a fair comparison of pre and post levels of patient satisfaction across hospitals. There were also large batches of missing data from some hospitals. The National Research Unit (2012) also highlighted that the study's scale of improvement on well-performing wards was small. Similarly, in a US study, Halm (2009) systematically reviewed the evidence-base and recommended the continued use of intentional care rounds. Recommendations were made based on statistically significant improved patient safety (reduction in use of call bells and patient falls) and improved patient satisfaction outcomes (reduction in anxiety), although clinical measures of effect were not identified, and the evidence-base

was limited to quasi-experimental and observational studies, illustrating further weakness of method and reliability.

More recently, the National Nursing Research Unit (2012) and Lyons *et al* (2015) have further scrutinised the International evidence-base. In total 15 studies have evaluated the effectiveness of care rounds, 11 in the US; 2 in the UK; 1 in Saudi Arabia and 1 in Australia. Outcomes across studies are somewhat mixed. For example, Sherrod (2012) reported non-statistically significant reductions in rates of falls and hospital acquired pressure injuries; Woodward (2009) reported improvement in the reduction of falls. All studies reported improvements in patient satisfaction. However, considering the evidence base it is difficult to determine the real effect of the intervention, as differences in effectiveness could be due to extraneous or confounding variables, which could explain apparent contradictions in effectiveness. Apparent 'effectiveness' should therefore be treated with caution.

Fewer studies have measured the effect on the nurse's or caregiver's experience. Most of these studies identified a calmer or quieter environment as a facilitative factor for care provision (Ford, 2010; Berg *et al*, 2011). Neville *et al* (2012) highlighted that nurses faced challenges of staffing, skill mix, patient acuity and time-consuming documentation. Collectively these represent the potential variation in nurses' experience in the delivery of care rounds. Further research was recommended to explore the effects on different types of staff on the levels of satisfaction (Sherrod, 2012), suggesting that an individual's approach to the implementation of the care round could affect outcomes.

One theory-based study by Fabry (2014) used Rogers's Theory of Diffusion of Innovation to gain nursing staffs' perspectives and perceptions of hourly rounding in an acute care hospital setting. Again, similar to earlier studies on nurses' experience, perceptions varied between job category, shift worked and unit worked on. The study also highlighted nurse's lack of ownership of the process of delivering rounds and only 23.1 % indicated that completion of the checklist reflected actual care input. These findings suggested that understanding an individual's response to implementing care rounds is complex and if not understood can result in barriers to implementation (Lyons *et al*, 2015).

Furthermore, in the US, Dietrick *et al* (2012) conducted an ethnographic mixed method study on two units of a hospital and identified several similar practical, informational and motivational barriers. Neville *et al* (2012) observed similar barriers in their survey of nurses' perception of care rounds on 5 separate adult medical-surgical inpatient units. Nurses identified rounding as important to patients, but nurses' perception of autonomy and identification of patient needs through assessment were the most important factors in determining the frequency and duration of time spent with patients. These findings, from a triangulation of evidence suggested, that individual barriers represent a gap between what should be done and the actual implementation of care rounds. Therefore, exploring intentional behaviour would help to explain how these barriers affect planned decision-making as a motive to implement care rounds.

Further evidence suggests that an area of practice which requires a repeated behaviour can produce a negative professional response as it interferes with an individualised approach to care delivery. When using care rounds, the Californian Nurses Association (2010) suggested that the very nature of structuring and scripting interactions may act to dehumanise the process of nursing care, which does not represent individualised nursing care when patients are all treated the same (Semple, 2011). Other concerns have focused upon the behavioural problems associated with performing routine practice, (McCormack and McCance 2010; Semple, 2011). Semple (2011), citing the seminal work by Walsh and Ford (1989), highlighted that history tells us that routine practice can turn into damaging ritual practice, which can lead to become unthinking and dangerous. McCormack (2010) further argues the practicalities of nurses being available with patients every hour given the complexity of their role.

3.6 Using care rounds to explore and extend the understanding of intention and research utilisation

Professional concerns have highlighted the challenges to successful implementation and delivery of care rounds. The evidence suggested that implementers' experience of delivering care rounds is negatively weighted by numerous professional and practical factors. However, it is unclear how these negative perceptions affect the intention to implement care rounds. Therefore, exploring intention offers an opportunity to explore why, psychologically, implementers might hold different views and how this relates to planned decision-making and implementation of care rounds.

Many of the views and beliefs expressed in the implementation of care rounds are identified as also affecting intentional decisions. For example, the TPB measures attitudes, influences of colleagues (Subjective Norm) and perceived practical influences (Perceived Behavioural Control) all of which have been shown to affect individual care round decision-making. More specifically, Dietrick *et al* (2012) has also identified that attitudes between staff can vary, an important predictor of intention in the TPB.

The type of behaviour and type of implementer also helped to extend the scope and value of intention in explaining research utilisation behaviour. No previous studies have explored 'repeated' behaviours - as care rounds are implemented hourly. As intentions are 'behaviour specific' (Ajzen, 1991), this added to the small group portfolio of current behaviours. Studying a repeated behaviour also enabled the logical inclusion of 'habit' to be measured alongside intention, as repeated health professional intentional behaviours can result in habitual behaviour (Godin *et al*, 2008). Furthermore, as care rounds had been implemented for over 15 months, habit forming behaviours are likely, given habit with repeated behaviours in stable environments are common (Verplanken and Wood, 2006).

The care round was being implemented across all hospital wards, enabling the effect of 'clinical context' to be compared across ward areas; achieving the further objective, identified in the review to compare the effect of clinical context. Furthermore, the care round guideline was mainly implemented by nurses and health care assistants (HCAs), which offered the opportunity to compare intentions across occupational groups, a further objective identified from the systematic review.

In addition, and for clinical interest, from a quality point of view a behavioural exploration of care rounds is timely, given the National and International attention given to this area of nursing practice (Meade *et al*, 2006; Bartley, 2012; Lyons *et al*, 2015). Moreover, very little is known of the psychology underpinning this behaviour. Ultimately, understanding the psychology will add to the limited evidence-base in this important area of nursing practice, and provide important empirical insight into some of the reasons as to why nurses either adopt or do not adopt care round behaviour (Dietrick *et al*, 2012).

Therefore, identification of the care round checklist, as a behaviour to explore and extend the understanding of intention, was appropriate and timely, helping to advance the understanding of health professionals' instrumental research utilisation intentions in several areas. Both theoretical and professional differences could be compared and evaluated. Extending the model to include additional variables helped also to evaluate important theoretical concepts.

3.7 Theoretical model to be explored

The Theory of Planned Behaviour was utilised to explore intention, as this was the predominant model identified in the Systematic Review. Model variables were thus seen as important to understanding intention and were developed from a narrative synthesis of data predominantly from this model. In addition to standard TPB variables the systematic review established that two further concepts of habit and context should also be measured.

Systematic review findings also highlighted the importance of studying actual and self-report behaviour, as intentions are not always carried through into actions. However, on practical and empirical grounds only intention was explored as intention has been found to be a valid proxy measure of behaviour (Eccles *et al*, 2006).

Therefore, a self-report survey was designed to explore concepts in an extended TPB model applied to measure implementation of the care round checklist. Two behaviours, completing 'all elements' and 'essential elements' of the checklist, typical of implementation behaviour to nurses and HCAs were explored.

Figure 4. Care round behaviour 1: all elements of the checklist

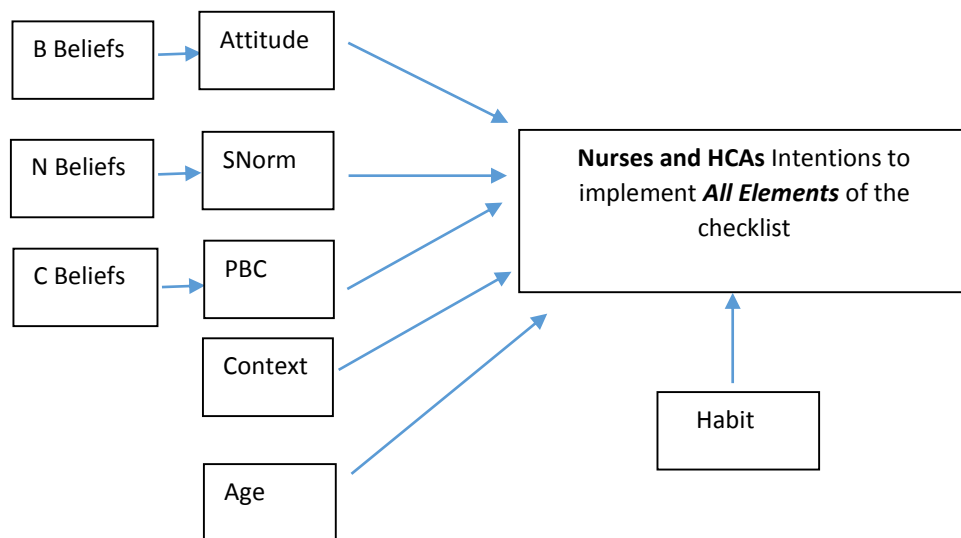
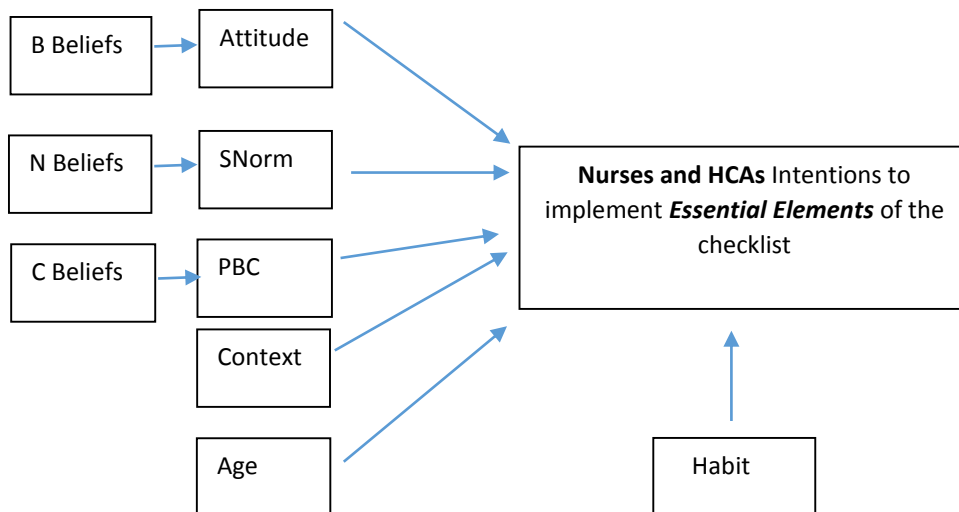


Figure 5. Care round behaviour 2: essential elements of the checklist



3.8 Research Questions

Research questions were designed to develop the understanding of nurses' and HCAs' implementation of care rounds through comparing differences in intentional behaviour. Overall, the questions provided a vehicle to explore important theoretical (intention) and professional (habit and context) variables within a new instrumental research utilisation behaviour.

Q1. Are nurses' and HCAs' frequency of delivery of care rounds using the checklist different or similar?

Q2. What are nurses' and HCAs' intentions to implement care rounds using the care round checklist, and does this vary across clinical environments?

Q3. What are the key beliefs which underpin the formulation of determinants of intention? Which of these beliefs have psychometric qualities?

Q4. Do nurses and HCAs hold similar or different beliefs?

Q5. Are perceptions of context and practice habits different amongst nurses and HCAs?

Q6. What is the association between nurses' and HCAs' beliefs and determinants of intention?

Q7. What is the association between TPB variables, attitude, perceived behavioural control, subjective norm, and habit and clinical context, and are there similar or different effects on nurse and HCAs?

Q8. Which variables best explain nurses' and HCAs' intention? Are these predictor variables similar or different between groups? Are demographic variables significant?

Q9. How well does the TPB model capture nurses and HCAs intentions to implement care rounds using the care round checklist?

CHAPTER 4: METHODOLOGY AND QUESTIONNAIRE DEVELOPMENT

The following pages describe and defend empirical methods used in this study to develop the questionnaire. The aim was to use reliable data collection and analytical methods to develop a trustworthy survey instrument to help measure set research questions established in Chapter 3.

4.1 Research Design

The systematic review and narrative synthesis of data established that health professionals' intention to use research products in their practice had been reliably tested using the Theory of Planned Behaviour (TPB), resulting in good levels (30-70%) of intention being captured by the model. Godin *et al* (2008) provided further support for the reliability of the TPB in evaluating and predicting health professionals' intention. Therefore, this study used the TPB to explore nurses and HCAs intentional care round behaviour.

Intention is a psychological (internal) construct which is formed through beliefs and evaluation of those beliefs. Ajzen (2006) recommends capturing beliefs through qualitative methods of enquiry. Quantitative methods are also needed when evaluating the strength of an individual's beliefs, which helps to understand how intentions are represented in a wider population (Francis *et al*, 2004). Using a qualitative and a quantitative approach to understand intention ensures that both the subjective meaning and the predictive value of intention are measured using mixed data collection methods (Ajzen, 2006). Therefore, research design in this study was informed by a

theory driven approach using mixed methods, methods recommended when exploring intentional theory-driven behaviour (Ajzen, 1991, 2006; Francis *et al*, 2004).

Empirically, exploring the subjective meaning and predictive value of intention involves the design and development of a survey instrument capable of collecting qualitative and quantitative data (Francis *et al*, 2004). Qualitative data collection techniques were used to identify and analyse beliefs, before converting them into questionnaire items. The use of a survey instrument represents a quantitative method of data collection, as typically in survey-based research, outcomes are measured objectively and are representative of a wider target population, hallmarks of a quantitative approach (Oppenheim, 1992). Thus, mixed data collection methods were used to explain participants' beliefs and predict their intention to implement the care round guideline.

4.2 Methodological and empirical aims

The main methodological aims were to develop a trustworthy survey instrument representative of the study constructs, and distributed to a large enough sample of the target population to reliably measure intentional, habitual and context specific care round checklist implementation behaviour. Current knowledge in the development of TPB questionnaires was considered and applied (Francis *et al*, 2004; 2009; 2010). Where there were methodological uncertainties in questionnaire design, a way forward was explored by way of the literature and peer consultancy, and advances made in how to best develop a trustworthy TPB-based questionnaire.

Throughout, the researcher aimed to demonstrate a transparent and reflexive approach in data collection and interpretation. This is particularly important in mixed methods research as qualitative methods of enquiry require the researcher to make subjective interpretation of the data (Leech and Onwuegbuzie, 2007) and in this study quantitative measures (survey items) were developed from qualitative data (Coyle and Williams, 2000). Therefore, where data were interpreted, the process of interpretation was fully described, helping to achieve the level of transparency required whilst conducting mixed methods research (Coyle and Williams, 2000).

4.3 Reconciling the measurement of intention using mixed methods

Epistemological traditions of qualitative and quantitative research methods (Henderson, 2005), and also philosophical disagreements as to the validity of using mixed methods to understand phenomena were considered (Coyle and Williams, 2000). This helped to provide a context and rationale for the measurement of intention as applied in this study.

4.3.1 Ontological and Philosophical underpinnings of quantitative and qualitative research

The nature of knowledge or the 'ontological' position establishes how we come to 'know' about phenomena (McKenna, 1997) and what establishes 'reality' (Creswell *et al*, 2011). Complementary to this, the epistemological position establishes the means of generating knowledge or how knowledge can be obtained, driven by the ontological position (Bazeley, 2010). Hence, the philosophical or ontological position should drive or provide focus for how the empirical research is carried out. In this study, the

philosophical position was complicated by the need to use both qualitative and quantitative methods. Traditionally, qualitative and quantitative ontological approaches have been polarised by distinctly different views on the truth of 'knowledge', when generated through research (Guba and Lincoln, 1994). Therefore, given these seemingly incompatible stances, a way forward, as an epistemological approach to understanding 'intention' was considered. Plotting a way forward helped to provide the basis for a transparent empirical approach in this study; as epistemology and methodology are related, as the epistemological position adopted guides the type of data worth collecting (Hall, 2013).

4.3.2 Establishing a philosophical position in this study

Philosophical positions in empirical research are represented by different paradigms, or 'world views' (Guba and Lincoln, 1994). The contemporary understanding of 'mixed methods' research (Creswell and Plano Clark, 2007; Teddlie and Tashakkori, 2009) can be understood by four distinctive paradigmatic positions: post positivism; constructivism; transformative and pragmatism. As post positivism is closely identified with quantitative research and constructivism qualitative research, transformative and pragmatism as paradigm positions were explored, as these positions advocate a 'third way' when elements of the post positivism and constructivism are used. Of these two positions, pragmatism was further explored as the 'transformative' position did not fit with the logic of the study, as transformative research focuses on the emancipatory orientation of marginalised groups (Tashakkori and Teddlie, 2003) not relevant in this study.

Teddlie and Tashakkori (2009) identify pragmatism as a 'single paradigm' approach, in which the interface between the methods of research and philosophy are explored. Pragmatists argue that a false dichotomy exists between quantitative and qualitative methods (Creswell *et al*, 2011), and advocate a 'methodological pluralism' in which both qualitative and quantitative methods should be used to measure phenomena (Onwuegbuzie and Teddlie, 2003). The current understanding of the cognitive structure of intention, in terms of how intentions are formed and measured, supports a pragmatic approach; as it is recognised (Ajzen, 1991; Francis *et al*, 2004) that both qualitative and quantitative methods used are required to explore intention.

Therefore, philosophically a 'pragmatic' approach was taken, as the purpose of the study was to actively discover beliefs and predictors of intention, in the process, recognising the strengths of qualitative and quantitative methods. The purpose of this study was not to re-design how intention is measured through an established model of intention, but rather to evaluate the value of a model in explaining intention; therefore, typical of a pragmatic approach to research, 'answering the research question' became the central focus of this study; as the research question should drive the methods used and epistemology should not get in the way of getting the research done (Miles and Huberman, 2013).

As pragmatists concede, epistemologically, this approach does not resolve the views held by purists (Tashakkori and Teddlie, 2003); that qualitative and quantitative methods should not be combined. However, recognising the similar goals of both approaches in the validation, testing and measurement of instruments to set research

questions, this epistemological approach was considered the most appropriate in this study.

4.3.3 Using mixed methods to measure intention

Taking a pragmatic stance, the use of mixed methods was considered when applied to the measurement of intention. The established methodological approach of understanding 'intention' when measured by the TPB necessitates the use of qualitative and quantitative methods. When the TPB is used to measure intention, use of both methods complement one another and help to understand the underlying structure and predictive value of intention (Francis *et al*, 2004). Furthermore, the reliability demonstrated from previous mixed method studies in measuring intention using the TPB (Bolman *et al*, 2002; Limbert and Lamb, 2002; Foy *et al*, 2005) is evidence that philosophical ideals should not stand in the way of empirical evidence.

When using a mixed method approach, the priority of a primarily quantitative or qualitative (or evenly weighted) approach to empirical enquiry largely depends on the scholar's research agenda and theoretical applications (Creswell *et al*, 2011). In this study, the survey instrument was the main source of data collection to understand intention. Therefore, priority was given to quantitative data collection and subsequent analysis, yet the qualitative method of one-to-one semi-structured interviews helped to shape the questions and statements in the final instrument, a self-report questionnaire. As suggested by Creswell *et al* (2011), when developing a survey, a mixed methods

approach to research design offers the scholar robust analysis and understanding of the issue.

The instrument also helped to measure key research questions which focused on comparing nurses and HCAs intentional behaviour. The use of quantification makes it easier to aggregate, compare and summarize the data, and allows for statistical analyses (Creswell *et al*, 2011). A properly conducted representative survey also allowed for generalization of results, a further study aim.

4.4 Survey Instrument development

As an overview, the development of the survey instrument proceeded through established theory-based sequential data collection and analysis procedures (Francis *et al*, 2004, 2010; Ajzen, 2006). First, semi-structured one-to-one interviews were conducted to explore beliefs to implement care rounds. Second, participants' views were content analysed and developed into belief-based questions in the questionnaire. Third, questionnaire items were constructed to measure intention, attitude, subjective norm and perceived behavioural control. At this stage, questionnaire items for measuring habit and clinical context were also constructed. The questionnaire was then piloted to check for problems of content, usability and reliability, important checks in any survey design process (Oppenheim, 1992).

4.4.1 Elicitation of TPB model beliefs

4.4.2 Semi-structured interviews

Using Ajzen's (2006) theory requires field work to identify salient behavioural, normative and control beliefs. Salient beliefs can be generated from either focus groups or semi-structured one-to-one interviews (Ajzen, 2006). As the researcher had previous experience of conducting one-to-one interviews and no experience of conducting focus groups, qualitative data collection used individual interviews. Moreover, as the focus groups required HCAs and nurses, there was limited evidence in how best to set up groups, as combining HCAs and nurses or keeping groups separate would likely to elicit different responses. It was also considered that a one-to-one interview would provide nurses and HCAs with the anonymity required to express their beliefs, which is often an advantage particularly in issues (as in care rounds) where differences in opinion are common (Dietrick *et al*, 2012).

In total, 30 interviews were conducted in the local hospital in which the main survey was distributed, which helped to develop belief-based measures for all predictor constructs in the TPB model (attitude, subjective norm and perceived behavioural control). The interviews were also used to identify the meaning of other variables the researcher set out to explore, such as context. Consistent with previous studies on the clinical meaning of context and research utilisation behaviour (Cummings *et al*, 2011), the significance of context as related to the 'clinical encounter' and 'environment' were elicited, which added to the content validity of the concept as applied to care round implementation behaviour.

4.4.3 Sampling for elicitation study

The sampling method for elicitation studies is determined by the need to identify commonly held beliefs within the target population (Francis *et al*, 2004). The required sample size to reliably represent commonly held TPB beliefs from one-to-one interviews is a minimum of 10, which helps to reach a satisfactory level of content saturation of interview data (Francis *et al*, 2010). In this study, 10 semi-structured interviews were conducted on three separate floors of the hospital, for a total of 30 interviews to populate the content of behavioural, normative and control beliefs. Conducting interviews across three separate floors was designed to unearth a potential range of beliefs across clinical areas, as the practice of care round implementation can be affected by different clinical environments, such as staffing and skill mix (Neville *et al* (2012), all of which represent the potential variation in nurses' experience in the delivery of care rounds.

It should be noted that despite using a qualitative interview-style data collection technique, the method of sampling is not a typical qualitative sampling approach, this is because the analysis of content is focused upon generating a representation and frequency of salient beliefs, which is not a characteristic outcome in qualitative research (Strauss and Corbin, 1990). Typically, in qualitative analysis the focus is on purposively selecting individuals to inductively develop ideas or theory as in grounded theory, which forms the basis for the sampling approach (Francis *et al*, 2010). In this study, the purpose was to populate commonly held beliefs rather than inductively develop ground-breaking theory. Therefore, sampling a range of staff proportionate to the target population until a common frequency of beliefs were established was the required

method (Francis *et al*, 2010). Nurses and HCAs were asked to participate, which produced a sample of convenience.

A saturation of *shared beliefs* for behavioural, normative and control beliefs was observed after a number of interviews on wards on different hospital floors. The final 2 interviews on each floor were assessed, to establish if any new content emerged. Using this approach helped to identify if new findings altered the frequency of beliefs generated for each belief category.

Although this method of data saturation, in theory-based interview studies is thought to be a reliable approach to populate beliefs (Francis *et al*, 2010), there are additional factors which should be considered, which can affect the trustworthiness of data saturation. When populating beliefs, the adequacy of the sample, time spent with each participant and number of participants required to achieve saturation are important (Tracy, 2010). In this study, a proportionate range of nurses and HCAs to the wider population were sampled, and a similar amount of time spent in each semi-structured interview; the interview schedule was also applied consistently with each participant. In terms of how many participants to interview and when to 'stop', as described, this was guided by Francis *et al*, (2010). In defence of this method of sampling, and to achieve saturation, the context and aims of populating representative 'pre-specified theoretical concepts' was explored.

Sampling numbers and significantly, who to sample, typically, become more important in other types of qualitative research such as grounded theory. When seeking to build

theory, the researcher purposely samples participants to construct theory, implied by the data (Munhall, 2012); which implies that theoretical saturation can significantly be affected by the type of participant. This is different to the sampling approach in this study, which aims to populate pre-specified theoretical constructs with contextually relevant content. Using this approach, although it is recognised that isolated 'new beliefs' could have been unearthed from additional interviews, this is unlikely to affect the order of representativeness of the top 75% beliefs, particularly as 'new' beliefs are representative of shared beliefs.

Therefore, in this study, as beliefs are populated by the frequency of populated *shared beliefs*, it is unlikely that new beliefs expressed in additional interviews are likely to affect the top 75% of beliefs which make up the belief content, particularly as the sampling frame was being well-represented by staff in each ward area. Achieving 'saturation' from qualitative interviews to populate representative beliefs, again, illustrated the use of mixed methods and reinforced the need for a pragmatic approach.

4.4.4 Recruitment for elicitation interviews

Each nurse and HCA as per the ethical protocol provided signed consent to participate in the interview, see *Appendix H*. All Band 5 and 6 nurses and all HCAs were eligible to participate in semi-structured interviews. Following negotiation with the Assistant Chief Nurse for the hospital, senior ward nurses helped to identify staff that would be available (if consented) to participate. The researcher requested that the ratio of HCAs to Nurses was 1:3, as this represented the national ratio in Acute Hospital Trusts (Griffiths *et al*, 2016). Although previous research utilisation studies have identified

demographics as being potentially influential on intentional behaviour (Godin *et al*, 1998; Francis *et al*, 2010), controlling for this was not possible. However, analysis of demographic data at a later stage in the research indicated that by chance the distribution of demographics was representative.

4.4.5 Semi-structured interview schedule design

Interview schedule questions were designed to be theoretically consistent with the TPB model (Francis *et al*, 2004). The wording of the target behaviour in belief elicitation questions is important. Ajzen (2006) stresses the importance of defining the behaviour of interest and all other variables to fit with the corresponding measures of Target, Action, Context and Time (TACT). At the start of each interview and during the course of the interview the target was identified as the 'patient', the action was 'implementing the care round checklist', the context at the patient's bedside and time on the hour, which fits with the logic of TACT when measuring intention (Ajzen, 2006).

Salient beliefs are those that come to mind when respondents are asked open-ended questions, and are also referred to as accessible beliefs (Ajzen and Fishbein, 2000). In line with best practice (Sutton *et al*, 2003), instrumental and affective belief-based questions were asked. In each section of the interview schedule, responders had the opportunity to respond to open-ended question which could elicit both types of response. For example, to explore behavioural beliefs, standard practice would be to ask the 'advantages' or 'disadvantages' of a behaviour (Francis *et al*, 2004). However, limiting behavioural beliefs to 'advantages and disadvantages' is likely to bias their response, as this is likely to elicit only 'instrumental beliefs' rather than 'affective beliefs'

(Sutton *et al*, 2003). Therefore, for each set of belief-based questions, standard questions recommended to elicit beliefs were posed (Francis *et al*, 2004). In addition, an 'affective' question on how responders 'felt' about implementing the checklist were aimed at eliciting affective beliefs. Ensuring that instrumental/affective questions are posed is important and supported by several studies, mainly in assessing intentional health outcomes (Darker *et al*, 2007). Questions from the interview schedule can be seen in *Appendix J*.

4.4.6 Conducting the semi-structured elicitation interviews

Each interview took place in the hospital. Each participant was offered a choice of where the interview was conducted (*Appendix H*). Interviews took place either in the education centre or in the participant's ward office. Most interviews were conducted in the participant's ward office, disruption was minimised by assurance from senior nurses, which created a positive and safe environment for expressing information, important in any qualitative data collection (Whiting, 2008).

The interview started by confirming the participant's consent (*Appendix I*) to participate in the interview, and the context of the interview, with reference to TACT. Interview schedule questions were consistently read as posed in the interview schedule (*Appendix J*). This is important in TPB studies, as the interviewer should aim to capture salient beliefs to specific theory-driven questions (Ajzen, 1991).

The interviewer used probing techniques to encourage a fuller response to interview schedule questions. Careful and consistent use of probing ensured that participants

developed their responses without the interviewer introducing further leading questions - which could affect the confirmability of this stage of the data collection process (Wood and Ross-Kerr, 2014). On a practical level this was limited to asking responders to 'tell me a little bit more about that', a well-rehearsed approach for TPB studies (Francis *et al*, 2004). Responses were recorded and transcribed verbatim to ensure a full record of the interview. There were no technical problems with equipment and participants did not appear to be distracted and had no objection to the use of recording equipment.

4.4.7 Content analysis of interview data

The main aim of the data analysis was to develop representative and reliable questionnaire items from the interview transcripts. This involved discovering what were the most salient behavioural, normative and control beliefs held by interviewees. To achieve this, methods of content analysis were used.

Guidance from methods of qualitative content analysis were used to develop questionnaire statements (Graneheim and Lundman, 2003), and standard quantitative methods used to represent salient beliefs by the frequency of categories (Francis *et al*, 2004). This resulted in a 4 step process, involving the efforts of two analysts. The main investigator was involved in all processes and a second analyst involved in confirming the validity of coding and representation of codes in each developed category.

The aim of *step 1* was to generate meaningful and representative concepts from the raw interview data as first level concepts (Attride-Sterling, 2001). The process of interpreting

meaningful concepts is also known as *open coding*, or developing codes, where chunks of raw interview data (which can be sentences or whole paragraphs) are interpreted and described (Burnard, 1991, 1996; Hsieh and Shannon, 2005). This is acknowledged as a well-known starting point for interview data analysis and was used to develop as many relevant conceptual codes as possible to fit the beliefs expressed (Denzin and Lincoln, 2000; Burnard 1991; Neuendorf, 2002; Graneheim and Lundman, 2003; Munhall, 2012).

NVivo 10, a computer assisted qualitative data analysis software package was used to organise and code the data. Using NVivo 10, raw interview data which provided clear reference to beliefs were identified as 'meaning units'. Meaning units were then condensed into a 'condensed meaning unit'. This involved a process of shortening the meaning whilst still preserving the essence of the meaning unit; an important part of the process of content analysis which preserves the key message portrayed by participants (Graneheim and Lundman, 2004). A number of 'meaning units' with the same meaning were therefore applied to the same 'condensed meaning unit'. This process helped to inductively develop themes which fitted with the different beliefs measured in the interview schedule.

To help confirm the validity of interpretation of condensed meaning units (where codes were interpreted from meaning units) a second analyst analysed all interpreted codes to verify and challenge the primary researcher's interpretation of codes. A pre-determined size of analysis unit of text (i.e. simple word or combination of words in text) to develop first level codes was not utilised, as it was felt that this did not reflect the

'meanings' of respondents identified in the data, and ultimately could fragment and misinterpret the meaning of text (Graneheim and Lundman, 2004).

Step 2 involved a process of theme development where condensed meaning units were grouped together under a general category heading, more commonly known as a theme. This is often referred to as 'abstraction' or grouping under higher order headings (Graneheim and Lundman, 2004). This is similar to the process of axial coding in qualitative content analysis, which condenses or collapses first level codes into higher level headings or themes (Miles and Huberman, 2013). The emphasis on theme development was to amalgamate the meaning of raw text in the abstracted theme, an important step in content analysis (Graneheim and Lundman, 2004). Using the method described enhanced the confirmability of how themes were developed, and ensured that raw text was clearly abstracted into themes.

Step 3 involved categorising all the condensed meaning units under each theme. At this stage a second analyst checked if meaning units could be logically fitted into each theme. A worked illustration of this process is represented in *Appendices I to P*. Checks of inter-rater reliability were performed. Where there were disagreements, condensed meaning units were placed into alternative theme headings, as illustrated there was a high percentage of agreement between researchers.

4.4.8 Salient beliefs results

Step 4, the final phase, involved identifying the most frequently represented salient beliefs in each category of 'Behavioural Beliefs', 'Normative Beliefs' and 'Control Beliefs'.

This involved identifying how many different condensed meaning units were contained in each belief category/theme. Themes with the highest number were retained and used as content for questionnaire statements. TPB guidelines propose that inclusion of 75% of all beliefs stated should give adequate coverage of the 'belief' population (Francis *et al*, 2004). The cut-off point for inclusion of content was 75% (indicated in bold in *Tables 3, 4 and 5*), often considerably more >80% of content was included depending upon the number of frequencies in each belief-theme.

In most interviews, when asked if participants would like to add 'anything else you associate with views about care rounds', in most interviews participants just reiterated or summarised what they had said earlier. Some general points were made about implementation of the checklist such as 'good for audit', but this type of response was not themed as there is no direct relation to beliefs being measured. Therefore, frequencies of content from this question were not included.

Table 3. Nurses' and HCAs' frequently stated *behavioural beliefs*

Nurses and HCAs	Nurses and HCAs	Nurses and HCAs
Behavioural Belief Advantages %	Behavioural Belief Disadvantages %	Behavioural Belief Feelings %
-Provides evidence of care provision 28%	-Lack of time to complete hourly care rounds 21%	-An annoying and frustrating task 34%
-A reminder or prompt to implement the care round 20%	-Not ticking the checklist does not necessarily reflect care input 12%	-Helps to promote patient contact 30%
-When busy helps to coordinate delivery of basic care 18%	-Distracts from providing an individualised patient Assessment 12%	-Repetitive task, placing pressure on staff 11%
-Good assessment tool for basic needs 10%	-Creates workload and staff Pressures 12%	-Bothersome to patients 5%
-In complex ward environments, helps to refocus to patient's needs 10%	-For some staff ticking completion of the checklist just results in ticking boxes 9%	-Does not reflect variety of patients needs 5%
-Helps to promote patient contact 10%	-More support from MDT and medical staff would help to implement the checklist 9%	-Can result in tick box approach 5%
-Reassuring for patients and their relatives 5%	-Is irrelevant for some areas 7%	-Not a priority 2%
	-Difficult to implement at night 5%	
	-Checklist design difficult to use 5%	

Some of the content contained statements which had more than one meaning. For example, 'the type and number of patients' were important control factors. In the questionnaire, this content was presented as two questions, one on the 'type' of patient and another question on the 'number' of patients. This was to avoid posing single questions with more than meaning, which should be avoided in Likert-style questions (Wood and Ross-Kerr, 2014). Some content for enabling factors (advantages) and disabling factors (disadvantages) was similar. Questionnaire items reflected content in this section.

Table 4. Nurses' and HCAs' frequently stated *normative beliefs*

Nurse and HCAs	Nurse and HCAs	Nurse and HCAs
Normative Belief Approval %	Normative Belief Disapproval %	Normative Belief Feelings %
-Senior nurses would approve when implemented 27%	-Patients sometimes feel hourly care rounds are unnecessary 40%	- Some staff's lack of interest can affect morale 32%
-Patients and their relatives approve 23%	-Senior staff can raise concerns if gets in the way of other care 35%	-Colleagues views does not affect my implementation 23%
-Sets standard for non-nursing staff and other members of MDT 23%	-Staff if not done properly 18%	-Having staff approval and support important 20%
-Implementation appreciated by my colleagues 19%	-Disapproval if not done Properly 16%	-Colleagues non-completion frustrating 10%
-Not about approval 8%		-Feel supported by Colleagues 10%

Table 5. Nurses' and HCAs' frequently stated *control beliefs*

Nurse and HCAs	Nurse and HCAs	Nurse and HCAs
Control Belief Advantages %	Control Belief Disadvantages %	Control Belief Feelings %
-The type and number of patients 36%	-When busy spending extensive time on other necessary care 33%	-Complex ward layout does not help 32%
-Increased number of staff 21%	-When short-staffed and unsupported 25%	-Type of patient and their needs affects the round 27%
-Improved communication and delegation 21%	-When staff or patients are off the ward 17%	-Easier to complete at Night 18%
-More flexible use of the checklist 14%	-When patients condition makes it difficult to complete 17%	-Checklist should be developed for different Shifts 9%
-When with self-caring patients 14%	-Confusing checklist 9%	-Can feel insensitive to patients and their families 9%
-A re-designed checklist 7%		

4.4.9 Converting salient beliefs into questions

To construct belief-based questions some, but not all, traditional procedures were followed. The development of the number of questions was kept to a minimum, as high numbers of questions are known to affect response rates (Wood and Ross-Kerr, 2014), which is a common problem in TPB studies (Kortteisto, 2010). Therefore, the challenge was to design valid belief-based questions from the generated statements whilst keeping the number of questions to a minimum.

Traditionally, themes developed from content analysis are then converted into questions to measure behavioural, normative and control beliefs, in which the top 75% of statements are used as a basis for different questions (Francis *et al*, 2004). Conventionally, each belief-based question for behavioural, normative and control beliefs are measured by 2 component parts (Ajzen, 1991). For behavioural beliefs this relates to the expectancy of the outcome of the behaviour and the strength of belief associated with that expectancy (Ajzen, 1991). For normative beliefs the motivation to comply and strength of that motivation, and similarly for control beliefs the strength of the belief and how this affects a sense of control (Francis *et al*, 2004).

However, using this approach to measure beliefs essentially doubled the amount of questions in this section of the questionnaire. This approach resulted in 70 belief-based questions which was thought to be prohibitive to participants' completion of the questionnaire, totalling nearly 100 questions (*Appendix X*), which was too many and too time-consuming to retain commitment of participants. Therefore, each belief-based statement was measured with one question rather than two. The questions were re-

designed in a response format which helped to capture both the expectancy associated with each action (by wording of the question) and also capturing the strength of belief associated with the action by measuring the level of agreement on the Likert scale (strongly disagree to strongly agree) (*Appendix Q*). By convention, this may be a limitation of the questionnaire design, although this was viewed as an opportunity to reach a compromise to find a more efficient method to measuring beliefs with fewer question items. Potentially, this could have affected the proportion of variance associated with beliefs, but without comparing the conventional method with this approach, this is uncertain.

A 7-option response format is most often recommended in the TPB literature (Ajzen, 2002, Francis *et al*, 2004) ranging from strongly disagree to strongly agree. In this study, the author wanted to avoid responders returning passive responses (neither agree or disagree), a feature in Likert scale responses when measuring psychometric properties (Wood and Ross-Kerr, 2014). Therefore, a 6-option response format was used, which required responders to make a choice between agreeing or disagreeing with each question statement. For consistency, the method was applied to all Likert scale questions for all TPB, Habit and Context based questions. To avoid response bias, question statements had a mix of positive and negatively worded end points (Francis *et al*, 2004).

Each question was presented as a positive or negative statement, each with a singular central meaning. This ensured that unipolar responses (from Likert scales) were related to the central meaning posed in the statement, important when designing Likert scales

to address the specific question (Wood and Ross-Kerr, 2014). Questions with more than one statement were avoided, sometimes a problem in unipolar measurement (Cozby, 2009). To ensure responses related specifically to the behaviour, each question statement included words related to the care round checklist. This is important in TPB studies, and reminds the responder to the behaviour in question (Francis *et al*, 2004).

Using this question design 15 behavioural belief questions, 11 normative belief and 9 control belief questions were designed. The questions were arranged so there was a mix of positive and negative statements, which helped to prevent response bias (Francis *et al*, 2004). The mean of the item scores were calculated to measure each belief, which is a standard approach (Francis *et al*, 2004). Generated items are illustrated in *Appendix K*.

4.4.10 Development and measurement of direct measures of intentional behaviour, attitude, subjective norm, perceived behavioural control, habit and context

Mostly standard procedures were followed to construct the remainder of the questionnaire items (Francis *et al*, 2004). Direct measures of attitude, subjective norm and perceived control were developed using set procedures on the same 6-point response scale. Again, scores were calculated from the mean score for each question.

4.4.11 Selection of the behaviour using the TACT Principle (Target, Action, Context, Time)

The behaviour of interest was defined and related to nurses' and HCAs' intentions to implement the care round checklist. This essentially involved describing two different

types of care round checklist implementation. From elicitation interviews and the wider literature on care rounds (Bartley, 2011), it became apparent that 'care round implementation behaviour' was likely to involve either the completion of 'all elements' or only 'essential elements' of the checklist. Therefore, these two different implementation care round checklist behaviours were used to measure intention.

When measuring intention, the TACT principle should be used to clearly relate the behaviour of interest to intention (Francis *et al*, 2004). Following this principle was important as it helped to establish the link between the specific behaviour and intention – a principle of compatibility necessary in the accurate measurement of intention (Ajzen, 1991).

The *first behaviour* related to the completion of 'all elements' of the care round checklist. The care round checklist is completed every hour when possible with the full cooperation of the patient. In this instance, the 'Target' was the patient, the 'Action' was the Nurse or HCA implementation/completion of the care round checklist, the 'Context' was with full co-operation with the patient and 'Time' was the repeated care round checklist at hourly intervals.

The *second behaviour* related to completion of only 'essential elements' of the care round checklist. The care round (guided by the checklist) is completed every hour with or without the full cooperation of the patient. In this instance, the 'Target' was the patient, the 'Action' was the Nurse or HCA implementation of the care round checklist, the 'Context' was with or without the full co-operation with the patient and 'Time' was

the repeated care round checklist at hourly intervals. Responders were given the option to indicate which behaviour best reflected their day to day care round practice. This provided additional information on specific care round intentions.

4.4.12 Measuring Intention

Three methods can be used to measure *Intention*; intention performance; intention simulation, and generalised intention (Francis *et al*, 2004). Intention performance is a single item question (e.g. *given 20 patients how many patients would you expect to complete care round checklists every hour?*). The number indicated would be the intention score. This method of reporting intention was not used as the objective of the study was not focused on evaluating intention to the number of patients seen by Nurses or HCA in an hour.

Intention simulation involves creating scenarios which reflect actual practice environments. Using this method can provide a more valid proxy measure of behaviour (Francis *et al*, 2004). However, scenarios can be misleading and lack reliability if not clearly related to the individual's practice experience (Francis *et al*, 2004). This was a particular concern with this study, as several different types of clinical areas and environments (different wards and units) would make designing representative and reliable scenarios difficult to achieve, so this approach was avoided.

The approach used to measure intention was by *generalised intentions*. Three items were used to capture the measurement of intention: 'I expect', 'I want' and 'I intend'. There are some subtle conceptual differences between these terms (Francis *et al*, 2004),

although empirically there is considerable response consistency between the 3 items (Armitage and Conner, 2001). (*Appendix R*).

4.4.13 Measuring attitude, subjective norm and perceived behavioural control

To promote consistency of scale measurement, the same even number (6-point scale) was used as a response format, and questions again were worded both negatively and positively to prevent response bias in each section.

Francis *et al* (2004) recommends that at least four items following a single 'stem' which defines the behaviour under investigation should be used. Questions on 'attitude' were measured as related to each behaviour (completing 'all elements' or only 'essential elements'). A response format of bipolar objectives was created using instrumental and affective pairs of opposites. A number of studies have reported the need to measure attitude with both instrumental and affective components (Darker *et al*, 2007; Sutton *et al*, 2003). Therefore, instrumental and affective items measured attitude.

Instrumental items included (i.e.; whether the behaviour is *necessary-unnecessary* and *useless-useful*) and affective items (i.e.; *good-bad* and *important (for me) – unimportant to me*). See *Appendix S* which illustrates direct measurement of Attitude, Subjective Norm and Perceived Behavioural Control

The same principles were applied to measure subjective norm and perceived behavioural control, with all question items being on the same 6-point Likert scale. As

these question items were on a Likert scale with responses ranging from 'strongly disagree' to 'strongly agree', endpoints were not mixed (Francis *et al*, 2004).

4.4.14 Measuring Habit

Historically, habit has been conceptualised as a process of learned sequences of acts that become automatic responses to specific cues (James, 1890; Hull, 1943; Verplanken and Aarts, 1999). Contemporary evaluation of this conceptualisation suggests that repetition of behaviour (in a given context) influences habit strength which leads to automatic responses (Verplanken, 2006; Lally *et al*, 2010; Gardner, 2012). Thus, as behaviour is repeated in the same context, the control of behaviour is thought to gradually shift from being internally guided (beliefs, attitudes and intention) to being triggered by situational or contextual cues (Nilsen *et al*, 2012).

As care round checklist implementation is performed frequently, potentially a large proportion of participants' behaviours could be moderated by habitual responses. Therefore, care round checklist habits were measured to understand their influence on nurses' and HCAs' behaviour.

The most used rating scale of habit is the 12-item self-report habit index (SRHI) (Verplanken and Orbell 2003). This scale measures the frequency, automaticity and identity of past behaviour, and has proved to be reliable in discriminating varying frequency (daily vs weekly) of repeated behaviours. More recently, Gardner *et al*, (2012) evaluated the content validity of items in the original 12-item SRHI and established that automaticity can be reliably represented by fewer items.

In this study, automatic items were selected to measure habit, as care rounds had been implemented for 18 months in the trust which is likely to engender automatic behaviour (Gardner *et al*, 2012). Furthermore, habitual behaviour is most likely to be attributed to automatic behaviour in associated contexts (Orbell and Verplanken, 2010); as for care round checklist implementation. Items on frequency and identity were not included as Gardner *et al* (2012) found less empirical support for these items. Therefore, 7 items were used to measure habit. For consistency, the same response format was used as for other areas of the questionnaire. (*Appendix T*).

4.4.15 Measuring Context

The initial systematic review established that the context in which clinical guidelines are implemented can affect individual practitioner's intentional behaviour. For example, intention to use hand hygiene products and glove use in clinical practice are moderated by the effect of hand hygiene products (O'Boyle *et al*, 2001), access to gloves and presence of blood (Godin *et al*, 2001, Watson and Myers, 2001) respectively. Therefore, it is important to recognise the moderating or inhibiting effect of practical problems which could interfere with intentional decision-making (Cummings *et al*, 2010). These findings are also consistent with Meijers *et al's* (2006) systematic review of the relationship between contextual factors and research utilisation in nursing, in which access to resources and role of the nurse were found to have a statistically significant relationship with instrumental research utilisation.

In some studies, these moderating effects are measured through the perceived behavioural control (PBC) component in the TPB (Beatty and Beatty, 2004). However, in this study the problem of context was thought to have additional 'contextual' effects as 'actual inhibiting effects' rather than only 'perceived effects' which is measured through the PBC. Therefore, contextual components were generated and measured in a separate section in the questionnaire, as potential practical obstacles to the implementation of the care round checklist.

Content was developed through discussion in interviews and informal collaboration with senior nurses. The implementation of the care round checklist should involve talking with patients to ensure they are comfortable and being cared for in a safe environment (Bartley, 2010). The checklist guides the assessor to assess basic needs, such as hydration and elimination needs (Bartley, 2010). Therefore, the ability to talk to the patient and their clinical condition are likely to have moderating effects on implementing the checklist, which is a common concern with those responsible for implementation (Fabry, 2014). Further feedback from elicitation interviews and informal discussion with senior nurses identified that the patient's condition and their ability to engage with the nurse or HCA in the process of implementing the care round were likely to have an inhibitive effect on implementation. Therefore, six context-based questionnaire items were constructed. (*Appendix U*)

4.4.16 Demographic questions

Nurses and HCAs of various grades, ages and different gender were employed across wards in the hospital. One of the key outcomes of the study was to establish differences

in intentional care round implementation behaviour between nurses and HCAs, and also potential differences across different ward environments. Therefore, section one of the questionnaire was designed to record this detail. (*Appendix V*)

4.5 Pilot Study – Test of the instrument

The pilot test served two purposes: to fix any unforeseeable problems with the survey and gain feedback from the participants. The final draft questionnaire (which contained all items) was piloted on one ward in the local NHS Trust in which the main study took place, although was not sampled in the main study. Francis *et al* (2004) recommends that at least five respondents should comment on the content and general usability of the questionnaire. To ensure sufficient sampling, 30 duplicate copies of questionnaires were made available to nurses and HCAs to complete. Following consultation with the ward manager, copies of the questionnaire were left in the ward office for nurses or HCAs to complete if they wished to participate.

Seven nurses and one HCA participated in the pilot. The pilot draft was also sent to the Assistant Chief Nurse of the hospital and feedback was provided from meetings held with senior nurses. This provided further electronic feedback by email.

Guidance outlined by Francis *et al* (2004) provided a basis for responders to comment on the content and usability of the questionnaire. A covering letter was left (*Appendix W*) for each responder asking their opinions on:

- Are any questions difficult to answer?
- Does the questionnaire feel too repetitive?
- Does it feel too long?
- Does it represent your thoughts on completion of care rounds using the checklist?

Overall feedback suggested that the questionnaire was rather long but questions were easy to answer and clearly related to the implementation of care rounds. Very minor changes were made to some questions and re-sent to the Assistant Chief Nurse and senior nurses. Finally, all recommended changes were made and the questionnaire was accepted in its final format. (*Appendix Y*)

Francis *et al* (2004) also advise an internal check of consistency as part of the questionnaire design. Responders were also asked to repeat the completion of the questionnaire with a two-week gap interval. This helped to evaluate the reliability of items in the questionnaire. Unfortunately, only 5 responders completed both questionnaires. However, this did indicate that the reliability of responses for the questionnaire, with Cronbach's Alpha scores greater than 0.8 on all items, a reliable measure of consistency (Wood and Ross-Kerr, 2014). Only questions achieving a Cronbach's alpha of 0.70 or greater were considered as acceptable. This is a widely accepted cut off point for interrelatedness of items within a scale is 0.70 or higher (Cohen, 1998). Therefore, all items were acceptable and included in the questionnaire.

4.6 Final survey – research participants (sampling)

The target population were all ward nurses and HCAs, irrespective of demographic. The sample were self-selective, all staff were asked if they could complete a questionnaire, and those staff that did complete the questionnaire did so by choice.

Therefore, the target population was achieved through a non-probability, convenience sample (Wood and Ross-Kerr, 2014). As a representative sample this approach has limitations, as features of those staff that completed the questionnaire may be different to those that did not complete, which could cause sampling error (Groves, 2006). However, attempts were made (see Final Survey Implementation) to secure a representative sample of individuals from each disciplinary group (nurses and HCAs), as subsequent analysis was based upon achieving sufficient numbers in each respective group. This was important because efforts to increase response rates can help to minimise bias by increasing the response of those who would otherwise not have participated (Groves, 2006).

Rashidian *et al* (2006) propose that in studies of intentional behaviour which use regression and correlation analysis, as a benchmark 'good' sample sizes are >150, although sample sizes of 80 would be acceptable, which was a realistic target (Francis *et al*, 2004). A key area of comparison was between nurses and HCAs intentional behaviour, therefore ongoing collection of questionnaires monitored numbers of nurses and HCAs until sufficient numbers were achieved. The proportion of HCAs to nurses in each area made accessing sufficient numbers for a statistical comparison difficult.

Although, the final sample size for each intentional behaviour for each group reached the minimum of N=30, for a statistical comparison (Field, 2014).

4.6.1 Final Survey - Implementation

The care round checklist was being routinely implemented on 25 wards, on 5 floors of the hospital (*Appendix Z*). This included General Medical, General Surgical and specialist wards in Oncology, Liver, Neurosciences, Neurosurgery, Renal Dialysis, Renal Surgery, Maxillofacial, Ear Nose and Throat, Stroke, Multispecialty, Vascular, Urology, Haematology, Colorectal, Cardiology and Cardiac Surgery. This did not include Emergency Care and Intensive Care as the care round was not being implemented in these areas.

As recommended by the Assistant Chief Nurse and senior nurses, paper copies of the questionnaire were left with the ward manager on each ward. From local experience it was advised that paper copies were more likely to be completed than an intranet-based survey. Therefore, thirty questionnaires were left with the ward manager on each ward. This provided enough questionnaires for all HCAs and nurses in each ward area. Senior nurses encouraged staff to participate and complete questionnaires. Introductory information on each questionnaire indicated that if staff completed the questionnaire, they were providing their consent to participate. Completed questionnaires were anonymised, and returned into a folder provided and left at the nurses' station.

Strategies to improve the response rate and participation in the survey recommended by Badger and Werrett (2005) were tailored to this study. This mainly involved

communication and support through the Assistant Chief Nurse for the hospital and direct and email contact through ward managers. Moreover, a multiple contact method was used, in which several email reminders were sent to all ward managers via the Assistant Chief Nurse of the hospital. This also included a thank you/reminder notice and a final contact with potential participants; a strategy also recommended by Dillman (2007). The principal investigator also made 4 separate visits in person to collect questionnaires on each ward and discussed strategies to encourage completion of questionnaires with ward managers. Material incentives were not provided as a mechanism to improve response, but repeated visits to ward areas encouraged staff to participate. The salience of the research to participants and emphasising the importance of the survey as related to their practice were strategies that can (Groves, 2006) and did improve the response rate.

In total 720 questionnaires were distributed to 24 wards, 30 questionnaires on each ward. This did not include the ward in which the pilot study was conducted, as this could have confused participants, and affected how participants responded.

4.6.2 Final survey – reliability

Measures of internal consistency were evaluated for each item in the questionnaire. Given the varied number of items across predictor variables a moderate level of 0.6 was appropriate and has also been endorsed (Streiner, 2003). This also protects against eliminating variables for the sake of achieving consistency of items in a scale.

The same level of alpha was used as a guide in Factor Analysis and multiple regression. A common problem when trying to achieve consistency and interrelatedness at the expense of losing important variables in a scale (Jopson, 2004). Reliability scores used in the multiple regression were established earlier from correlation analysis, therefore further checks on alpha scores were not necessary (Field, 2014). For all tests alpha scores were reported in the results section. Levels of internal consistency were established across all measures and reported in the results section.

4.7 Institutional Review Board Procedures

The main role of ethical review boards is to ensure risks to participants are minimised (NHS, 2016). As required by the local NHS Research Ethics Committee and University Ethics Committee, the researcher submitted an ethical application form explaining the objectives of the research and information on recruitment, consent, feedback, participant withdrawal, confidentiality, storage and access of data and risks. (*Appendix G*).

As a survey designed to measure the current service provision of care rounds in one NHS Hospital Trust, the research project was categorised as a 'Service Evaluation', and registered with the research and development department on the condition that methods of research proposed in the university ethical review were maintained. Studies which fall into this category do not require NHS ethical approval (NREC, 2016). However, minimal risk was reviewed and their rights and welfare considered, which is presented in *Appendix G*.

CHAPTER 5: ANALYTICAL APPROACH

Inferential statistics were selected to analyse data. This enabled inferences to be drawn from the sample, to the target population, and helped to determine if observed differences between variables and groups were real or occurred by chance (Field, 2014). This was important as intentional thinking and the 'intentional' use of care rounds is a national activity, any statistical differences, therefore, could theoretically be generalised to a wider population.

5.1 Organising and checking data in SPSS

The Statistical Package for the Social Sciences (SPSS) was used to conduct statistical tests. Statistical tests required to measure set research questions established earlier in the study were identified. Tests of the data were carried out to evaluate the appropriate use of each test. A recommended process was followed (Pallant, 2010) to include: checks of accuracy in data coding and checks of sample size and spread of data. This ensured appropriate tests were applied to reliably test set research questions.

5.2 Data coding

All data were entered into SPSS Version 22. Safety checks on accuracy of data were surveyed (Pallant, 2010; Field, 2014). Frequencies were initially checked to ensure that the data entered into SPSS was consistent with the scale of measurement in the questionnaire. This included checking the range of responses for each question and the minimum and maximum values.

Several questions needed to be recoded to ensure that high scores consistently reflected positive responses and low scores negative responses. This included questionnaire items in the section 'Your Patients', 'Intentional Care Round Behaviour' and direct measurements of 'Attitude', 'Subjective Norm' and 'Perceived Behavioural Control'. Belief-based questionnaire item scales were all coded in the same direction (from negative to positive), as the questions in these sections asked distinct questions.

To separately analyse nurses' and HCAs' intentions by employment status, all grades of nurses were analysed in one block, and all grades of HCAs in another block. Further analysis of each group by grade was not possible as the groups were unequal and had insufficient numbers for a meaningful statistical comparison.

The questionnaire required respondents to indicate which of two behaviours they would normally adopt when implementing the care round checklist (*all elements or only essential elements*). A small proportion of nurses (n=41) and HCAs (n=34) of the 260 who completed the questionnaire indicated their intentions to implement both types of behaviour. Essentially this provided more information and increased the number of responses for each behaviour. When the questionnaire was completed in this way, nurses and HCAs responses were recorded as 'All Elements' or 'Essential Elements Only'. Coding responses in this way to understand intentions does not violate the principal of compatibility, as intentions for specific behaviours are clearly indicated (Ajzen, 2001; Francis *et al*, 2004). This is also supported statistically, as the mean scores for those participants that completed the questionnaire in this way were not statistically

significant ($P = < 0.05$) to those nurses and HCAs which only provided answers to either 'All Elements' or 'Essential Elements'.

5.3 Missing data

Because of the large numbers of constructs and question items in TPB questionnaires, this can affect the accuracy in response and amount of missing responses (Francis *et al*, 2004). The questionnaire required 81 responses and took approximately 15 minutes to complete, which is viewed as a quite lengthy survey (Rolstad *et al*, 2011). The questionnaire also required responders to read instructions and make decisions in completing the questionnaire. Both of which (length and structure) of questionnaires are likely to result in the level of participant error (Rolstad *et al*; 2011). Therefore, an analysis of missing data was an important activity in this study.

The final data set contained some missing values, but it was unclear if there was a pattern. Deletion of incomplete cases that resulted from non-response is an undesirable method of handling missing data since it drastically reduces sample size and is susceptible to bias (Graham, 2008). Pallant (2010) stresses the importance of establishing if the pattern of missing data is made up from random or systematic error. Therefore, missing value analysis explored patterns of missing data in each group (nurses and HCAs) and for each intentional behaviour (all elements and only essential elements), as this would form the basis for statistical analysis.

When statistical tests were executed the 'excluded cases pairwise' option was used, as this did not affect the comparative number of cases between the two groups when

making comparisons (Pallant, 2010). Analysis of differences between the pre and post mean replacement values using paired sample *t*-tests indicated that there were no significant differences ($P=.05$) in the means of any of the variables following replacement of missing data, which was also a reflection of low numbers of missing data.

5.4 Executing statistical tests for each research question

For questions which required an exploration of statistical differences between groups, and the correlation between variables in the model, checks of normality, outliers and sample size were carried out. Checks on the normality of the sample are important when the aim of the study is to use parametric statistical tests to predict and make inferences as to the likely outcome in the target population (Wood and Ross-Kerr, 2014). Parametric tests use parameter estimates of a target population, but these estimates are only valid if the data within the sample are normally distributed (Field, 2014).

Checks on a normal distribution should compare the distribution of dependent variables with independent variables (Field, 2014). Essentially, if the sampling distribution for each comparison of independent variable (IV) and dependent variable (DV) fits within the limits of a normal distribution then a parametric test is appropriate. If the sampling distribution is outside recognised limits the non-parametric equivalent test should be used (Field, 2014). Several questions evaluated the relationship between IVs and DVs (in the intentional model) and therefore the normality of the distribution was evaluated.

A visual representation of histograms, box plots and pp plots were viewed for an initial visual indication of normality. As recommended by Field (2014), precise estimates of

normality based on the level of skewness and Kurtosis in the sample should be calculated by z scores, which are reported in the results section. The standard calculation involved dividing the Skewness and Kurtosis of each statistic (each IV and DV test) by the standard error. This produced a z score which gave an indication of the distribution of scores in the curve (Field, 2014). If the z scores were between -1.96 and +1.96 then the curve is considered to be normally distributed. Further tests of normality were assessed by reviewing the Shapiro-Wilk p value. The null hypothesis for the Shapiro-Wilk test of normality is that the data are normally distributed (Field, 2014). The null hypothesis is rejected if the p value is below 0.05 (Field, 2014). If test statistics for each IV and DV were greater than 0.05 then the sample distribution was considered normal.

5.5 Checks of normality, outliers and sample size for correlation, regression and factor analysis of questionnaire data

5.5.1 Checks of normality for correlation between variables in the model

For correlation analysis, tests of normality included viewing scatterplots and p-p plots with each combination of predictor variable (IV) and Intentional Variable (DV). If data were normally distributed and a linear relationship was evident, parametric (Pearson correlation) was used. If the data were skewed with curvilinear relationships, then non-parametric (Spearman's rho). In most combination of relationships between predictor variables and intention (as paired scores) the distribution of scores was skewed. Therefore, to promote consistency of reporting of relationships between predictor and outcome variables Spearman's rho was used. Bootstrapping was used to estimate the

confidence interval for predictor relationships and to make accurate generalisations to the population (Field, 2014).

5.5.2 Checks of normality for regression of variables in the model

For regression analysis, outliers were checked across IV and DV all scale variables. Residual values were viewed on scatterplots and as discrete scores in SPSS. If there were more than a handful of residuals outside -2.58 and +2.58 then these were excluded from the analysis. Any value outside these limits can affect the reliability of regression scores, and the possibility of making type I errors (Field, 2014).

The relationship of independent variables with each dependent variable was also examined for linearity, and Mahalanobis and Cook's distances assessed, which helped to identify the distance of residual values from the mean value; important when evaluating the impact of residual values (Field, 2014). Tests of multicollinearity were carried out to test if the variance in each predictor variable were clearly related to the dependent variable, an important test in TPB studies predicting intentional behaviour (Hankins *et al*, 2000). If tolerance levels were more than .01 and Value Inflation Factor (VIF) less than 10 (Field, 2014), then predictor variables avoided the problem of multicollinearity ensuring predictor values were reliable and avoided problems of confounding between predictor variables.

To explain the unique amount of variance in the dependent variable - predicted by independent variables, semi-partial correlations should be reported (Yong and Pearce, 2013). This helps to separate out each individual variable's contribution in the

prediction of the outcome (Field, 2014). At each stage of the regression, semi-partial correlations were reported to report their unique contribution, which also helped to control for the effects of other predictors in the regression analysis.

5.5.3 Checks of sample size for regression of variables in the model

The required sample size to test for statistical relationships between predictor variables and intention when using multiple regression is based on the power of the study (Field, 2014). Power calculations for sample size in multiple regression depend upon the estimated *size of the effect* (of intention) and the number of variables and cases per variable and the statistical power to detect these effects (Field, 2014).

Historically, the *effect size* of TPB in explaining Health Professional intentional behaviour has found intention accounts for up to a 30% of behaviour (Francis *et al*, 2004). In regression analysis this is viewed as a moderate effect size. This is based upon 3 predictor variables (attitude, subjective norm, perceived behavioural control) and a statistical benchmark or 0.8 or 80%. For TPB studies it is recommended that when using multiple regression, a multiple R of around 0.3 (30%) (Cohen, 1998) would lead to a recommended sample size of 80 (Francis *et al*, 2004).

However, more recently, Field (2014) (using Cohen's benchmark for effect size) recommended that a minimum sample size of 55 is sufficient for a regression of 6 or fewer predictor variables. Statistically, to avoid type II errors a minimum of sample size of 55 participants would be required to test for statistical significance at $p < 0.05$. In this

study for most combination of groups (Nurses and HCAS) with the analysis of intention the sample size was large enough to reliably test for statistically significant findings.

5.5.4 Checks of sample size for factor analysis

The reliability of factor analysis is dependent on sample size, as correlation coefficients fluctuate from sample to sample, more so in small samples (Field, 2014). There is no agreement as to the absolute required sample size to reliably test for correlation amongst variables in factor analysis (Field, 2014). However, as a general guideline it is recommended that a minimum of 100 participants is required and this is conditional on the communalities of variables (Field, 2014). Hence the higher the communality amongst variables (as coefficients) then the importance of the sample size decreases (MacCallum *et al*, 1999).

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For a sample size of 100, communalities should be above .6 which was used as a guide for factor loading. However, when the sample size was smaller, exploratory factor analysis can still be performed based upon higher communalities. Dewinter *et al* (2009) has suggested that if the communalities values are high with a range 0.8 to 0.9 then exploratory factor analysis is appropriate for a small sample size <50. In this study, the sample size for nurses and HCAs for implementing 'all elements' of the checklist was N=210 and for 'essential elements' N=132. Hence factors derived from each behaviour were developed from a sufficiently powered sample.

5.6 Exploratory factor analysis procedures

5.6.1 Planning for exploratory factor analysis

Exploratory factor analysis was used to examine how questionnaire items related to one another (Field, 2014). This is a mixed methods approach, in which a combination of quantitative (statistical correlation) and qualitative (labelling of factors) are used to reduce a large number of questionnaire items into a set of meaningful and valid factors (Worthington and Whittaker, 2006).

By reducing a large set of PBC (control beliefs), Attitude (behavioural beliefs) and Subjective Norm (Normative Beliefs) helped to identify key factors in each belief. Using this exploratory approach also helped to explain which factors explained each type of intentional behaviour, and at the same time addressed construct validity; a vital component in questionnaire development (Polit and Beck, 2010). To add transparency in how factors were developed, the Williams *et al.* (2012) five-step guide to using exploratory factor analysis was used.

5.6.2 Step 1: Is the data suitable for factor analysis?

The participant to variable ratio, the communalities of variables in a factor, factorability of the correlation matrix (communalities) and tests of sampling adequacy based on the Kaiser-Meyer-Olkin and Bartlett's test of Sphericity are important features (Williams *et al.*, 2012), which were assessed.

Minimum ratios of participants to items is generally considered as 5:1 and up to 10:1 (Worthington and Whittaker, 2007). Using the minimum criteria of 5:1, for behavioural

beliefs (15 items) a minimum sample size of 75 was required; with normative beliefs (11 items) a minimum sample size of 55 was required; and with control beliefs (13 items) a minimum sample size of 65 was required. For each belief and intentional behaviour, factors were developed from the whole sample of nurses and HCAs. Factorising beliefs using this method ensured that the logic of the TPB model (when aligning beliefs to specific intentions) was recognised, and complied with the 'principle of compatibility' in which specific behaviours are understood by their intentions, predictors of intention and beliefs (Ajzen, 1991). Using this approach, acceptable ratios were achieved in the factorability of items for each belief.

Acceptable sample sizes can also be mediated by communalities of questionnaire items (variables) in a factor (Field, 2014). When communalities are high (greater than 0.6) and each factor is defined by several items sample sizes can actually be relatively small (Henson and Roberts, 2006). Preliminary unrotated principal component analysis of nurses and HCAs range of beliefs (Behavioural, Normative and Control) illustrated several components greater than 0.6 in at least 2 factors. Again indicating a good level of power to establish statistically significant factors.

The factorability of items in a questionnaire should also be assessed for the sizes of the correlations (Field, 2014). Sizes of correlations thought to be acceptable are 0.3=minimal, 0.4=important and .50=significant (Hair, 1995). It is generally acknowledged that if correlations do not achieve a minimal level, then factor analysis should not be used to analyse the data (Worthington and Whittaker, 2007). For nurses and HCAs there were several items in each belief which ranged from 0.3-.0.5. This

demonstrated that there were a number of inter-relating variables which demonstrated relationships in each belief.

The Kaiser-Meyer-Olkin measure of sampling adequacy and Bartlett's test of Sphericity were carried out as a final check of sampling adequacy, which are both important checks (Field, 2014). The Kaiser-Meyer-Olkin test establishes if correlations in a matrix actually contain factors or simply chance correlations (Worthington and Whittaker, 2007). Chance correlations are unlikely if the index score is greater than 0.5. Similarly, the Bartlett's test estimates if the probability of the estimates in matrix are zero (null hypothesis); significance is demonstrated if $P < 0.5$. For each belief and behaviour, all factors matched these criteria.

5.6.3 Step 2: How will the factors be extracted?

Two approaches were considered when extracting data, Principal Component Analysis (PCA) and Common Factor Analysis (CFA). Both techniques can be used to reduce the number of questionnaire items into a more manageable number, and also explain linear combinations between groupings of factors (Field, 2014). Principal Component Analysis uses all of the data to provide information on the strongest and weakest linear combination in a data set (Field, 2014). This is useful when the aim of the analysis is to illustrate empirically which components contain the highest or lowest levels of variance. However, when trying to develop an understanding of constructs in a data set (relevant to each belief) this approach has limitations, as only variance of existing items are considered, which limits the scope of explanation across variables in a data set (Field, 2014).

CFA methods are driven by a mathematical formula which proposes that variables in a data set are likely to share or 'have something common' with each other (Field, 2014:667). Therefore, CFA only analyses variables with a shared variance (Field, 2014). Intuitively the use of CFA as applied to this data set made sense. Many of the questionnaire items in each belief posed similar questions, using CFA would help identify which combination of items possessed the highest variance. This also helped to identify items that simultaneously measure multiple factors, in which case they could be poor indicators of the desired construct and were eliminated from further consideration.

Despite differences between the two approaches, when sample sizes are large or there are large number of variables (>30) then the outputs are very similar (Field, 2014). However, in this study, the sample size was relatively small, and the number of belief-based items ranged from 10-25 in each belief. It was unlikely, therefore, that the use of PCA or CFA would produce the same outputs.

5.6.4 Step 3: What criteria will assist in determining factor extraction?

Two methods should be used when deciding how many factors should be kept for further analysis. Field (2014) identifies these as the eigenvalue associated with each factor, and by graphing the relationship of each eigenvalue on a scree plot. Standard practice is to include all variates with an eigenvalue >1.0, which helps to determine the importance of a factor and the amount of variance in the entire set of items accounted for by a given factor (Worthington and Whittaker, 2007). Essentially, eigenvalues greater than one indicate that more than one item of variance can be explained within

a factor, if eigenvalues are less than one then items explain less variance (Field, 2014). Based on these guiding principles only factors containing eigenvalues greater than one were included for data extraction, as sometimes the 'point of inflexion' indicative of variance associated with a factor can be ambiguous (Field, 2014).

5.6.5 Step 4: The selection of rotational method

Factor rotation maximizes the loadings of variables with a strong association with a factor, and minimizes those with a weaker one, and often helps make sense of the proposed factor structure (Oppenheim 1992). However, the selection of rotational method should complement the factor analysis approach (Field, 2014). In this instance, oblimin rotation was used, as factors were thought to have some relationship; a key feature of this method of rotation (Hutcheson and Sofroniou, 1999).

The process of rotation analysis was guided by the need to produce meaningful factors and at the same time demonstrate a replicable method, adding to the transparency of factors analysed (Worthington and Whittaker, 2006). Items which cross-loaded and shared variance across factors were generally deleted, and factors with less than two items of low communalities with a small number of items were also deleted. In very few circumstances these principles were circumvented to produce relevant factors, a necessary approach in exploratory factor analysis (Worthington and Whittaker, 2006). Most researchers use a guideline for a lower limit on item factor loadings and cross-loadings to determine whether to retain or delete items, but the criteria for determining the magnitude of loadings and cross-loadings has been described as a matter of researcher preference (Tabachnick and Fidell, 2007). Exploratory Factor Analysis is

ultimately a combination of empirical and subjective approaches to data analysis because the job is not complete until the solution makes sense (Field, 2014).

5.6.6 Step 5: Interpretation and labelling factors

Following the rotation of factors, there is limited guidance on how the grouped factors should be labelled. There is agreement that meaningful names for the extracted factors should be proposed, and that labels have theoretical and conceptual intent (Williams *et al*, 2012). There is also recognition that labelling of factors is a subjective process, and dependent upon the researcher's definition (Henson and Roberts, 2006). Therefore, factors were labelled that best represented the factor, and provided a useful description, without losing the meaning of the factor items. This approach is similar to using a constant comparative labelling approach in qualitative content analysis, which helps to produce confirmable labels to a group of items (Elo and Kyngas, 2008).

5.7 Factor analysis operations used in SPSS

5.7.1 Suitability for Factor Analysis: Kaiser-Meyer-Olkin (KMO) statistic and Bartlett's

Test of Variance

The KMO statistic was observed to see if the patterns of correlations were compact enough to yield distinct and reliable factors (Field, 2014). If the statistic was above 0.6 then factor rotation proceeded as this is seen as an acceptable level of compactness (Hutcheson and Sofroniou, 1999). The Bartlett test of Sphericity tests the hypothesis that there is no correlation between the questionnaire items (Brace *et al*, 2006). If $P = <.05$ the null hypothesis (of no correlation) was rejected and factors explored. The

correlation matrixes were also inspected to see if there were sufficient variables in each set of beliefs which had correlations $r > .30$.

5.7.2 Data extraction

It is commonplace to use an Eigen value of 1.0 as a cut-off point for selecting factors (Field, 2014). This was used because with a small number of variables (less than 30) using an Eigen value of one helps to accurately estimate factor scores, which fits with the number of variables being explored in the questionnaire. Scree plots were observed but were not used as a decision-tool for the number of factors to rotate, this is because the absolute cut-off point can sometimes underestimate the number of important factors in a scale of factors (Worthington and Whittaker, 2006).

5.7.3 Factor rotation and item deletion or retention

An oblique rotation of items in each belief was used as this also helped to identify the highest proportion of shared variance (Field, 2014). The corresponding SPSS function to carry out an oblique rotation was direct oblmen. This maximises the sum of variance which are oblique (Field, 2014). Initial rotation was based on a minimum factor loading of >0.3 , which is seen as workable level of coefficient to identify factors at first rotation (Field, 2014). Refining the factor structure involved an iterative process of item deletion and re-review of the factor structure in each belief. Following the initial rotation some factor structures were straightforward and required minimal rotation. When the factor structure was less clear, guidance on how to refine the structure was used.

Worthington and Whittaker (2006) recommend that refinement of the factor structure should involve setting a criterion for item deletion or retention. In this study, this initially involved viewing the relative value of initial factors, to determine the unidimensionality of each factor. If the items in a single factor had only one item or multiple cross-loadings or low levels of correlation, then the factor was deleted. Where possible, the minimum values for factor loadings was set as high as possible and the absolute magnitude for cross-loadings as low as possible. This resulted in fewer cross-loadings of lower magnitudes and better approximations of simple structure. As further recommended by Worthington and Whittaker (2006) absolute values for factor loadings and cross-loading of items were observed. Items were deleted if factor loadings were less than .32 or cross-loadings less than .15 difference from an items highest factor loading. Factors with 2 items were kept if they clearly contributed to the factor structure.

CHAPTER 6: RESULTS

6.1 Survey distribution and return

Thirty questionnaires on 24 wards (N=720) were distributed in December 2015. Following a 6-week data collection period (December-February 2015), N=270 questionnaires were collected, achieving a 38% response rate across the 24 wards. Both the time of year, and length of questionnaire are likely to affect response rate (Badger and Werrett, 2006). Given this, the efforts to achieve sufficient numbers by repeated multiple contacts with senior nurses and in person on wards produced a sufficient number of questionnaires. The final number of usable questionnaire (N=260) was representative of nurses and HCAs and enabled statistical conclusions to be drawn from the data. Ten questionnaires were not used as pages and more than 50% of questions were not answered, precluding meaningful inclusion in the final sample.

6.2 Checks of reliability

The criterion level for items measuring intention for *all elements* of the checklist (HCAs $\alpha=.83$, nurses $\alpha=.68$) and *essential elements* (HCAs $\alpha=.84$ and nurses $\alpha=.72$) was achieved. The highest scores of reliability was for habit items (HCAs $\alpha=.825$, nurses $\alpha=.842$). Attitude also achieved high levels of consistency (nurses $\alpha=.863$ and HCAs $\alpha=.894$) for *all elements* of the checklist; although lower levels of consistency were found in *essential elements* (nurses $\alpha=.735$, HCAs' $\alpha=.795$) – although the number of responses was less, which could explain some variation. Slightly lower levels of consistency were found with subjective norm (HCAs $\alpha=.689$, nurses $\alpha=.683$).

The scale was less consistent for direct measures of PBC, and also clinical context. Items of PBC were inconsistent for nurses ($\alpha=.476$) but less so for HCAs ($\alpha=.625$). To improve the consistency of scale for nurses the item 'decision beyond my control' was removed, which results in an acceptable alpha score of ($\alpha=.608$). As expected, levels of consistency between items of 'Context' were also marginally consistent. Items across the scale for HCAs achieved ($\alpha=.653$), but for nurses ($\alpha=.565$). The reliability score of the scale improved by removing (for nurses only) 'patients willing to engage'. A new composite score was then calculated in SPSS for further analysis which did not include this item.

6.3 Checks of missing data

Of the five sections in the questionnaire, in most sections missing values accounted for less than 3% of the sample. The highest number of missing values was for the direct measurement of attitude. Direct measures of 'attitude' to implement 'all elements of the checklist' across all cases was 7.24%, and for 'essential elements' 10.16%. When measuring differences in nurses' and HCAs' attitudes unequal missing values could have affected the reliability of results. However, missing data were not limited to one group. For the direct measurement of attitude, nurses and HCAs shared an approximately equal proportion of missing values which did not confound a reliable analysis of the data.

6.4 Demographic findings: age, gender, employment status and clinical area

Demographic data were explored to illustrate age, gender, employment and clinical area differences.

6.4.1 Gender

Across nurses and HCAs, 13.1% men and 86.5% women completed the survey. By employment status, this figure remained more or less constant. Amongst HCAs, 15.7% (N=17) men and 84.3% (N=91) women completed the survey, compared with 11.4% (N=17) men and 88.6% (N=132) women registered nurses.

6.4.2 Age range

The overall age of responders is presented in figures 7 and 8 below.

Figure 6. Age range

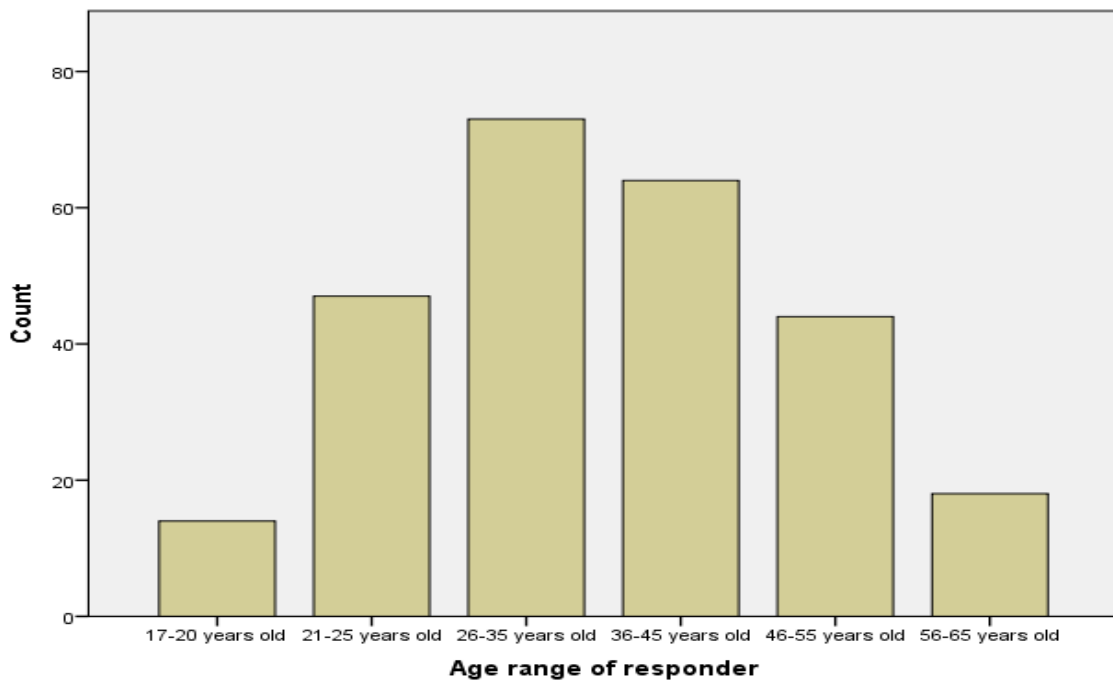
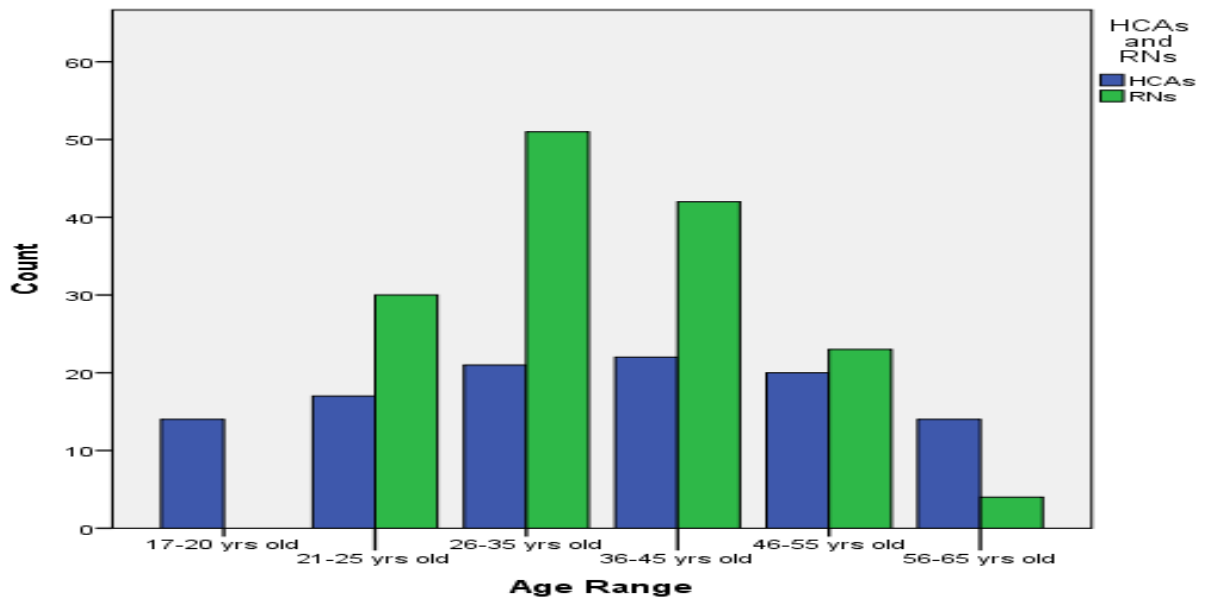


Figure 7. Age range of RNs and HCAs

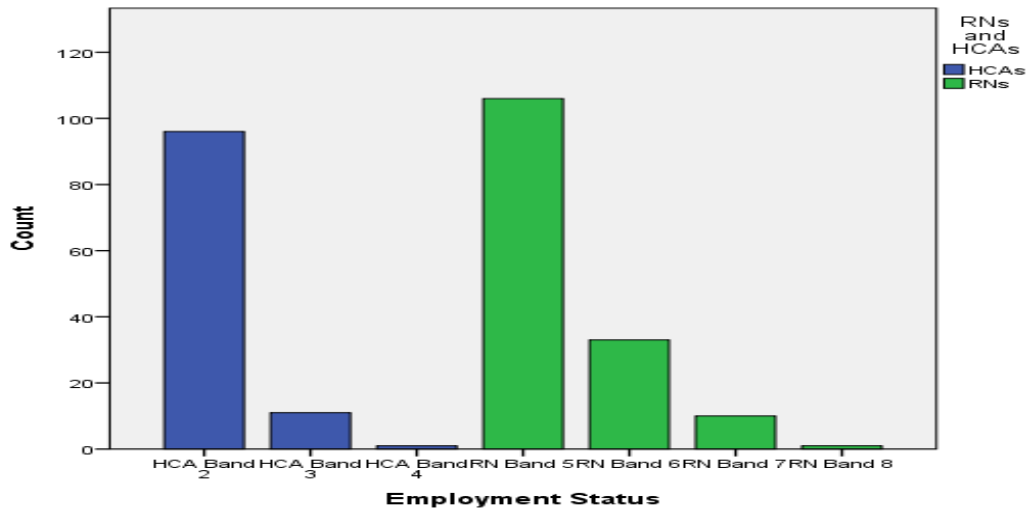


The distribution of ages for Registered Nurses and HCAs followed a normal curve. The distribution of HCAs' was symmetrical. The age of most nurses were between 21-55 years old, due to the period required to qualify as a registered nurse. Proportionally there were more nurses of a younger age. As a proportion of the workforce, there are a higher number 56-65-year-old HCAs, when compared to nurses. The highest number of nurses are between the ages 26-35-year-old, whereas the highest number of HCAs are between 36-45 years old.

6.4.3 Employment status

The majority of staff that completed the survey were Band 2 HCAs and Band 5 Staff Nurses. These two groups are representative of the main body of ward-based staff in the hospital.

Figure 8. Nurses and HCAs employment banding



6.4.4 Clinical area and hospital floor

Across hospital floors the response rates were similar, and mostly represented the ratio of Nurses to HCAs in the full sample; the exception being some wards on floor 5, where staffing challenges potentially had an effect on response rate.

Figure 9. Clinical ward area

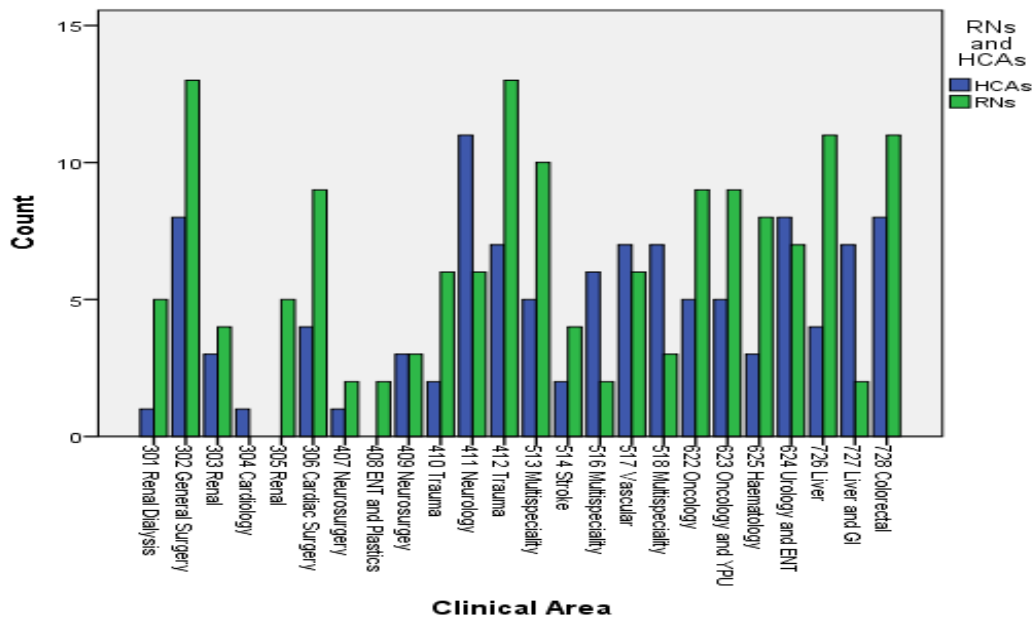
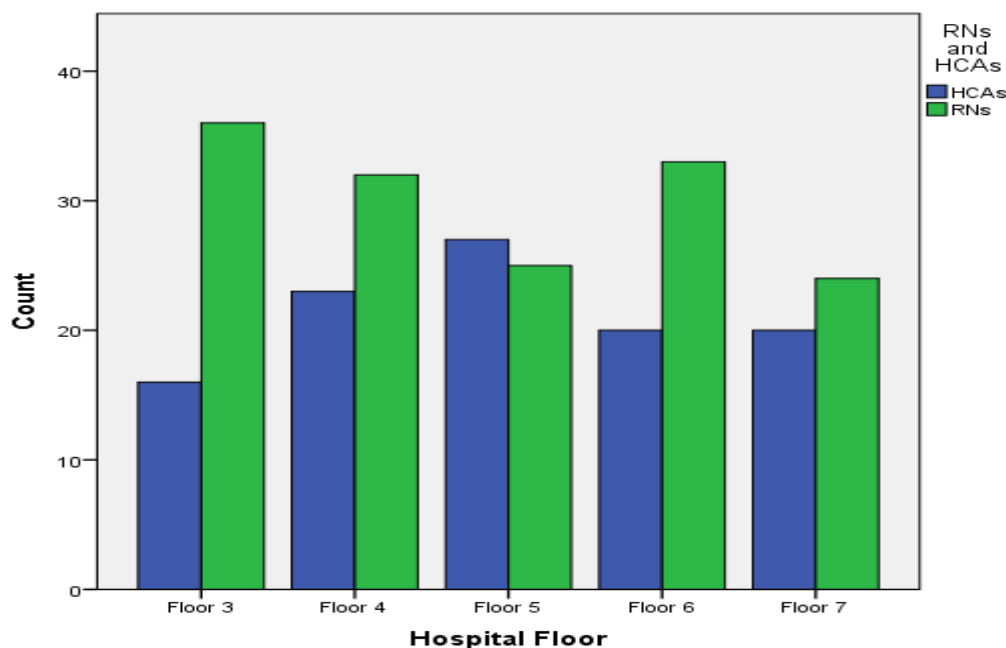


Figure 10. Staff by hospital floor

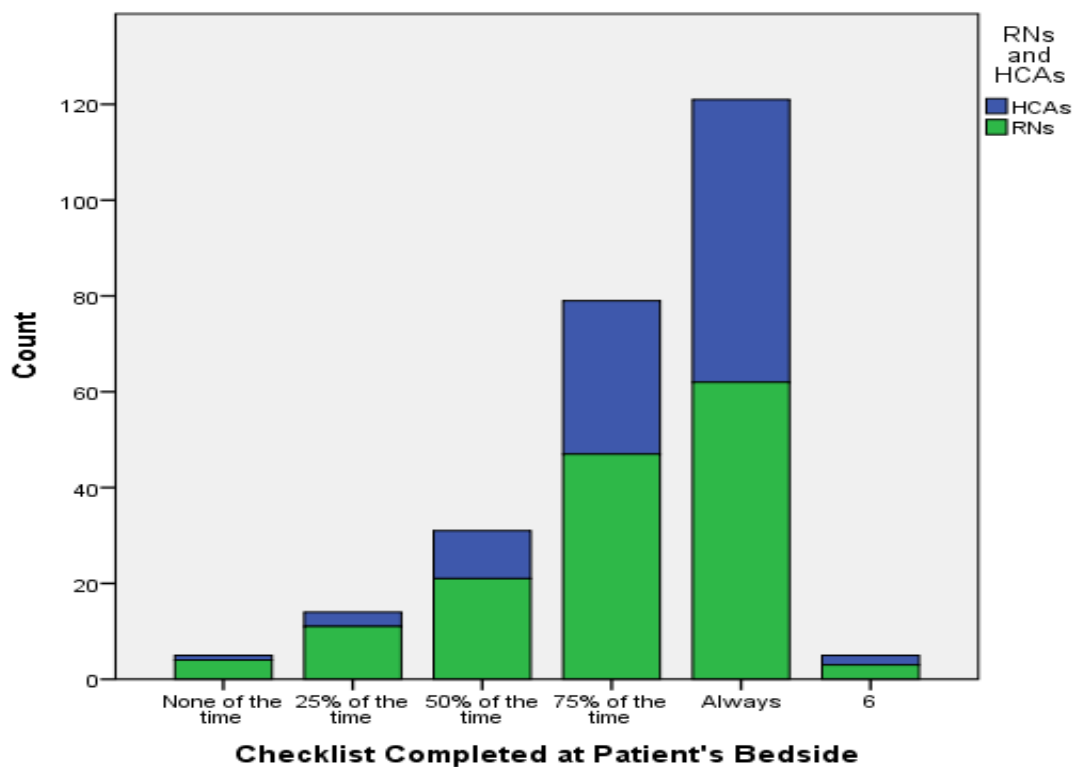


6.5 Nurses' and HCAs' frequency of delivery of care rounds using the checklist at the patient's bedside

Differences in where nurses or HCAs implemented the checklist were evaluated by describing and comparing the percentage of time checklists were completed at the bedside. Similar patterns of behaviour were observed between each group, although there were some differences.

Across all 24 wards, the most dominant behaviour for both nurses and HCAs was to 'always' complete the checklist at the patient's bedside. However, scores were different between the two groups. A higher proportion of HCAs (54.6%), when compared to RNs (41.3%), 'Always' completed the checklist at the patient's bedside. More RNs (31.3%) than HCAs (29.6%) completed the checklist 75% of time. For more than half the time, more RNs (24.3%) than HCAs (13.1%) did not complete the checklist at the patient's bedside. Figure 11 below illustrates these differences.

Figure 11. HCAs' and nurses' implementation of the checklist at the patient's bedside



6.6 Nurses' and HCAs' intentions to implement care rounds using the care round checklist

Scoring on the intentional scale for both intentional behaviours ('all elements' and 'essential elements') ranged from 1 to 6. Scores in the range 1-3 indicated a lower than average intention, and 3 - 6 a higher than average intention. A similar percentage of nurses (63%) and HCAs (66%) indicated an intention to implement 'all elements', and 'essential elements' (nurse=37%; HCAs=34%).

Nurses' (mean 4.2, SD 1.04) and HCAs' (mean 4.6, SD 1.16) intention scores to implement 'all elements' of the checklist indicated a weak but positive intention.

Intentions to complete 'essential elements' of the checklist were slightly weaker but also positive; nurses' (mean 3.7, SD 1.23) and HCAs' (mean 4.0, SD 1.18).

Expressed as percentages, of those nurses that intended to implement 'all elements' of the checklist, 68% of nurses expressed positive intentions (weakly, moderately or strongly agreed), of which a third expressed strong intentions. Similarly, 73% of HCAs expressed positive intentions to implementing 'all elements', of which 77% expressed strong intentions.

The support for implementing 'essential elements' of the checklist was slightly lower. Nurses intending to implement the checklist expressed 53% positive intentions, of which only 25% was in strong support. HCAs expressed more positive intentions in support of implementing 'essential elements' 62%, with 27% expressing strong intentions.

6.6.1 Intentions in the clinical area

Because of the variety and number of clinical areas it was difficult to evaluate differences in nurses' and HCAs' intentions. Across floors there was approximately an equal number of participants. Differences in intentions to implement either 'all elements', or only 'essential elements', were explored for each group. The results of a one-way ANOVA are illustrated in tables 6, 7, 8 and 9 below.

Table 6. Nurses' intentions to implement 'all elements' of the checklist by floor

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.796	4	.199	.174	.951
Within Groups	124.596	109	1.143		
Total	125.392	113			

Nurses intentions to implement 'all elements' of the checklist across floors were not statistically different (P=.951).

Table 7. Nurses' intentions to implement 'essential elements' of the checklist by floor

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	3.980	4	.995	.653	.627
Within Groups	92.923	61	1.523		
Total	96.902	65			

Nurses intentions to implement 'essential elements' of the checklist across floors were not statistically different (P=.627).

Table 8. HCAs' intentions to implement 'all elements' of the checklist by floor

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	17.066	4	4.267	3.410	.012
Within Groups	103.858	83	1.251		
Total	120.924	87			

HCAs intentions to implement 'all elements' of the checklist across floors were statistically different (P=0.12). Post-hoc comparisons using the Tukey HSD test indicated a lower mean score for intention (M=3.88, SD=1.49) for floor 3 when compared to other floors.

Table 9. HCAs' intentions to implement 'essential elements' of the checklist by floor

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	7.177	4	1.794	1.277	.295
Within Groups	57.598	41	1.405		
Total	64.775	45			

HCAs intentions to implement 'essential elements' of the checklist across floors were not statistically different (P=.295).

6.7 Identifying nurses' and HCAs' beliefs

6.7.1 Exploratory factor analysis

Exploratory methods of common factor analysis were used to Identify and classify nurses and HCAs beliefs.

6.7.2 Nurses' and HCAs' behavioural beliefs

6.7.2.1 Nurses' and HCAs' behavioural beliefs, initial data extraction, 'all elements' of the checklist

Initial data extraction for 'all elements' identified three factors, which accounted for 51% of the variance, which is considered a good level of variance in a data set (Field, 2014).

6.7.2.2 Nurses' and HCAs' behavioural beliefs, rotated solution, 'all elements' of the checklist

The initial rotated solution used an oblique rotation and resulted in the factor structure in table 10. The structure was then refined. One item 'promotes communication was deleted as the item cross-loaded on factors 1 and 3. This resulted in 3 factor rotated solution, in table 11.

The final factor solution in table 11 was interpreted and revealed three clear sets of factors of positive and negative judgements on the consequences of implementing the checklist. Factor 1 indicated a positive judgement of the checklist, factors 2 and 3 negative judgements and consequences. All factors were judged as internally consistent. Factors 1 and 2 were above the minimally accepted Cronbach’s alpha of $\alpha=.6$ (Field, 2014) and provided an internally consistent scale as composite measures of nurses and HCAs behavioural beliefs: Factor 1 ($\alpha=.906$); Factor 2 ($\alpha=.775$). Factor 3 ($\alpha=.447$), was slightly below an acceptable level of internal consistency, which is probably due to the small number of items in the scale (Field, 2015). As Factor 3 provided a different perspective on behavioural beliefs, so was retained.

Table 10. Nurses’ and HCAs’ behavioural beliefs, ‘all elements’, initial rotated factor solution

	Factor		
	1	2	3
Acts as a reminder or prompt	.883		
Good assessment tool for assessing	.863		
Complex wards help to refocus	.837		
When busy helps me to coordinate	.760		
Helps to provide evidence of care provision	.699		
Promotes patient contact	.658		
Promotes communication	.637		-.360
Creates too much workload stress		.725	
Lack of time to complete hourly		.701	
Distracts from individualised patient assessment		.658	
Can be annoying and frustrating task		.538	
Not ticking checklist does not reflect actual care			
More support from MDT			-.615
Improving design would help			-.508
Can result in just ticking boxes			-.350

Extraction Method: Principal Axis Factoring.

Rotation Method: Oblimin with Kaiser Normalization.

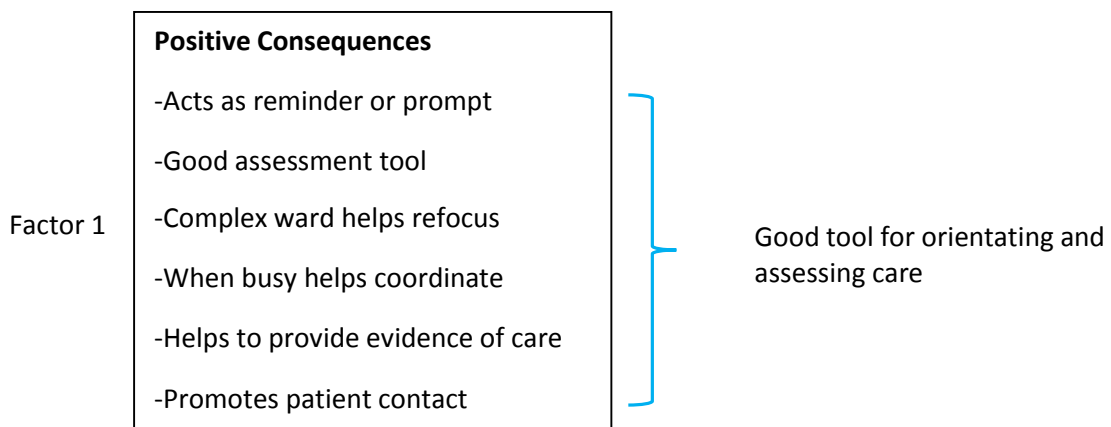
Table 11. Nurses' and HCAs' behavioural beliefs, 'all elements', final rotated factor solution

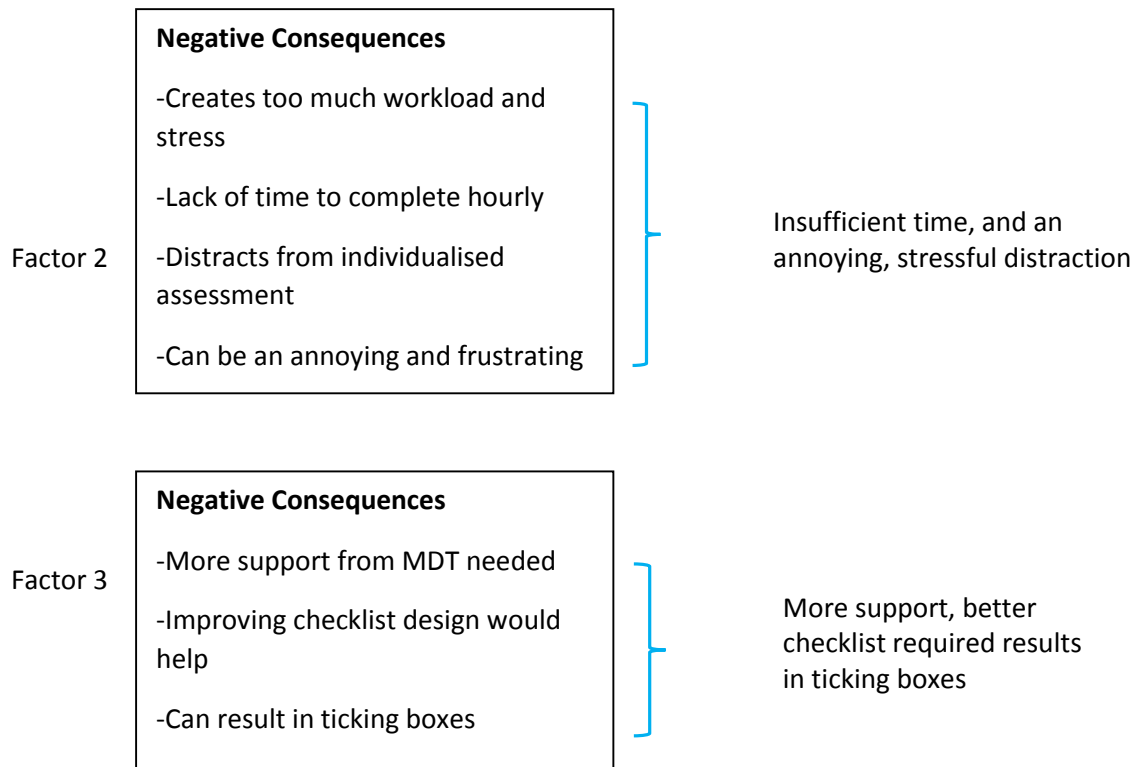
	Factor		
	1	2	3
Acts as a reminder or prompt	.879		
Good assessment tool for assessing	.867		
Complex wards help to refocus	.840		
When busy helps me to coordinate	.755		
Helps to provide evidence of care provision	.691		
Promotes patient contact	.661		
Creates too much workload stress		.741	
Lack of time to complete hourly		.692	
Distracts from individualised patient assessment		.655	
Can be annoying and frustrating task		.531	
Not ticking checklist does not reflect actual care			
More support from MDT			-.777
Improving design would help			-.418
Can result in just ticking boxes			-.326

Extraction Method: Principal Axis Factoring.

Rotation Method: Oblimin with Kaiser Normalization.

Figure 12. Nurses and HCAs behavioural beliefs, 'all elements' interpreted





6.7.2.3 Nurses' and HCAs' behavioural beliefs, initial data extraction, 'essential elements' of the checklist

Initial data extraction for 'essential elements' identified three factors, which accounted for 54% of the variance, which is considered a good level of variance in a data set (Field, 2014).

6.7.2.4 Nurses' and HCAs' behavioural beliefs, initial and final rotated solution, 'essential elements' of the checklist

The initial rotated solution used an oblique rotation and resulted in the factor structure in table 12. The initial rotation revealed three clear factors. Factor 1 indicated a positive judgement of the checklist, factors 2 and 3 negative judgements and consequences. All

factors were judged as internally consistent. Factors 1 and 2 were above the minimally accepted Cronbach’s alpha of $\alpha=.6$ (Field, 2014) and provided an internally consistent scale as composite measures of nurses and HCAs behavioural beliefs: Factor 1 ($\alpha=.930$); Factor 2 ($\alpha=.772$). Factor 3 ($\alpha=.590$), was slightly below an acceptable level of internal consistency, which is probably due to the small number of items in the scale (Field, 2015). As Factor 3 provided a different perspective on behavioural beliefs, so was retained.

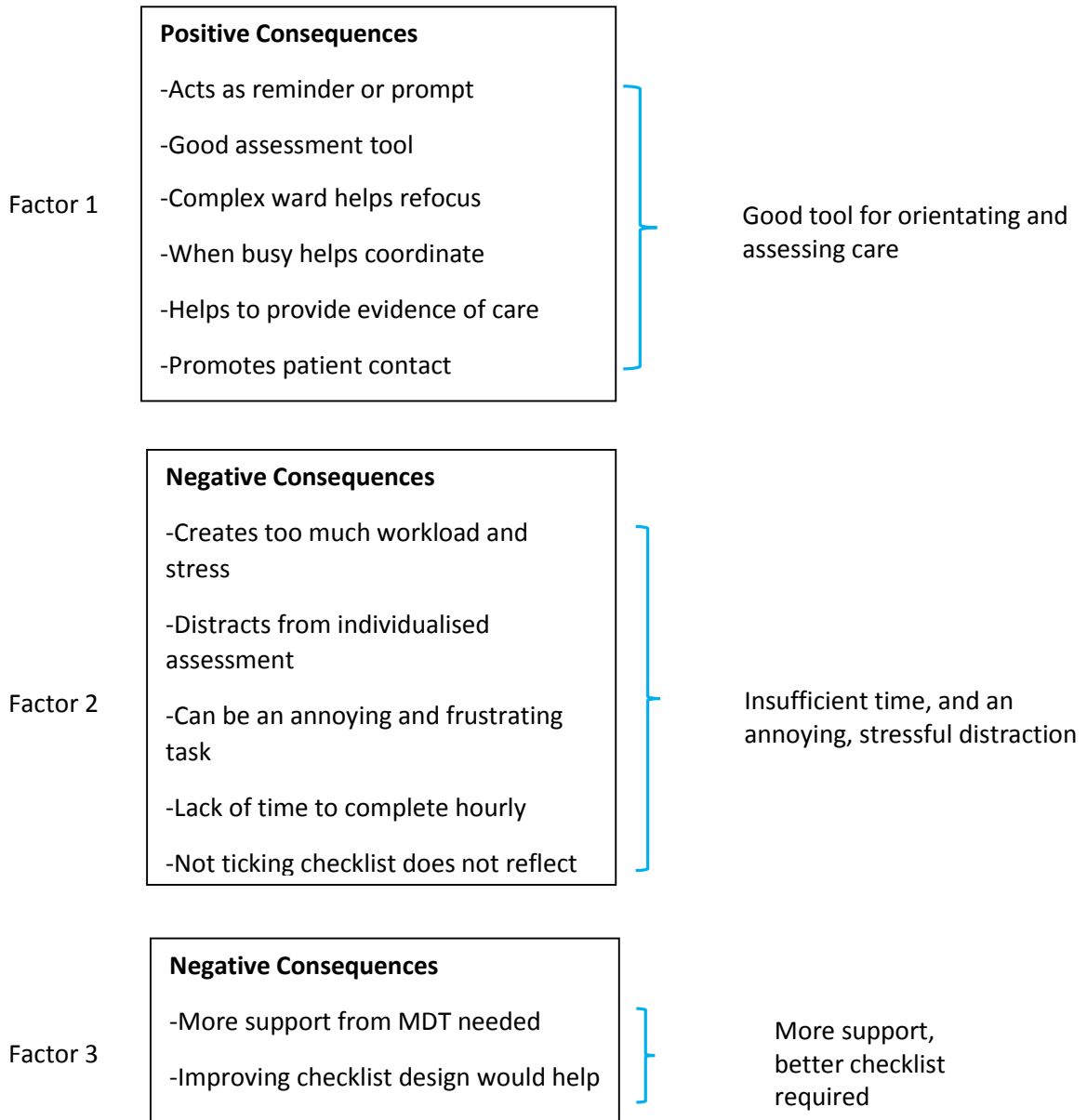
Table 12. Nurses’ and HCAs’ behavioural beliefs, ‘essential elements’, initial and final rotated factor solution

	Factor		
	1	2	3
Acts as a reminder or prompt	.950		
Complex wards help to refocus	.824		
Promote communication	.806		
Good assessment tool for assessing	.802		
When busy helps me to coordinate	.784		
Helps to provide evidence of care provision	.748		
Promotes patient contact	.684		
Creates too much workload stress		.734	
Distracts from individualised patient assessment		.681	
Can be annoying and frustrating task		.658	
Lack of time to complete hourly		.654	
Not ticking checklist does not reflect actual care		.395	
Can result in just ticking boxes			
Improving design would help			-.723
More support from MDT			-.587

Extraction Method: Principal Axis Factoring.

Rotation Method: Oblimin with Kaiser Normalization.

Figure 12. Nurses and HCAs behavioural beliefs, 'essential elements' interpreted



6.7.3 Nurses' and HCAs' normative beliefs

6.7.3.1 Nurses' and HCAs' normative beliefs, initial data extraction, 'all elements' of the checklist

Initial data extraction for 'all elements' identified three factors, which accounted for 45% of the variance, which is considered a good level of variance in a data set (Field, 2014).

6.7.3.2 Nurses' and HCAs' normative beliefs, rotated solution, 'all elements' of the checklist

The initial rotated solution used an oblique rotation and resulted in the factor structure in table 13. The structure was then refined. One item 'implementing same way as colleagues' was deleted as the item cross-loaded on factors 1 and 3. This resulted in 3 factor rotated solution, in table 14.

The final factor solution in table 14 was interpreted and revealed three clear sets of factors of positive and negative pressure associated with implementing the checklist. All factors were judged as internally consistent. Factors 1 and 2 were above the minimally accepted Cronbach's alpha of $\alpha=.6$ (Field, 2014) and provided an internally consistent scale as composite measures of nurses and HCAs normative beliefs: Factor 1 ($\alpha=.802$); Factor 2 ($\alpha=.518$). Factor 3 ($\alpha=.597$), was also retained despite the lower level of reliability, as the factor generated a different perspective on normative beliefs.

Table 13. Nurses' and HCAs' normative beliefs, 'all elements', initial rotated factor solution

	Factor		
	1	2	3
Sets standard other MDT	.912		
Patients and family appreciate	.715		
Completing as recommended	.579		
Appreciated by colleagues	.531		
Senior raise concerns			
Patients feel unnecessary		.791	
Staffs lack of interest affects me		.425	
Should complete same as colleagues			-.695
Having staff approval important			-.557
Implementing same way as colleagues	.375		-.476

Extraction Method: Principal Axis Factoring.

Rotation Method: Oblimin with Kaiser Normalization.

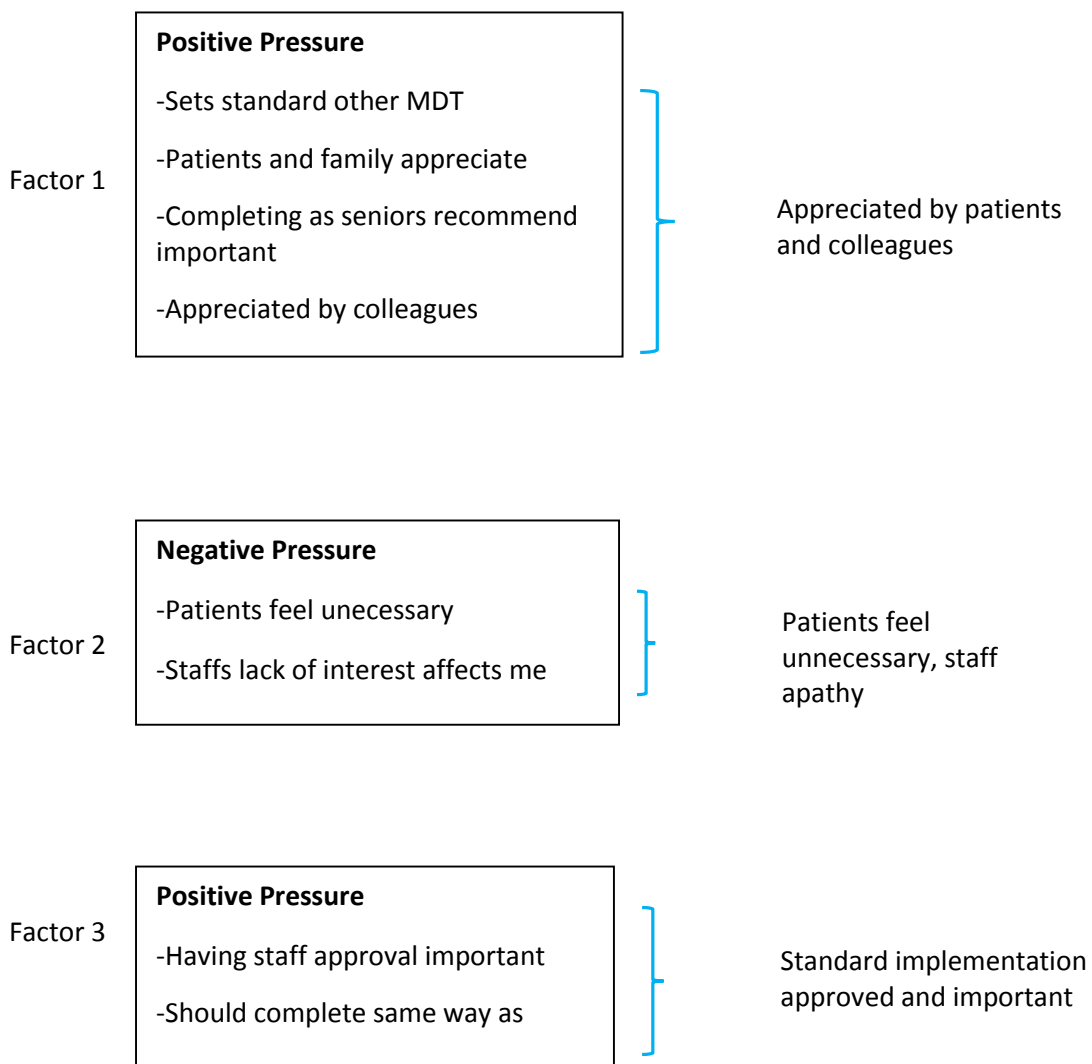
Table 14. Nurses' and HCAs' normative beliefs, 'all elements', final rotated factor solution

	Factor		
	1	2	3
Sets standard other MDT	.976		
Patients and family appreciate	.658		
Completing as seniors recommend	.565		
Appreciated by colleagues	.486		
Senior raise concerns			
Patients feel unnecessary		.767	
Staffs lack of interest affects me		.434	
Having staff approval important			-.778
Should complete same as colleagues			-.489

Extraction Method: Principal Axis Factoring.

Rotation Method: Oblimin with Kaiser Normalization.

Figure 13. Nurses and HCAs normative beliefs, 'all elements' interpreted



6.7.3.3 Nurses' and HCAs' normative beliefs, initial data extraction, 'essential elements' of the checklist

Initial data extraction for 'essential elements' identified three factors, which accounted for 48% of the variance; which is considered a good level of variance in a data set (Field, 2014).

6.7.3.4 Nurses' and HCAs' normative beliefs, rotated solution, 'essential elements' of the checklist

The initial rotated solution used an oblique rotation and resulted in the factor structure in table 15. The structure was then refined: 'having staff approval' and 'completing as recommended' cross loaded. A further rotation produced a 3 factor solution. The item 'should complete same way as colleagues' was the only item in factor so was removed. The final factor solution, in table 16, resulted in 2 distinct factors.

Table 15. Nurses' and HCAs normative beliefs, 'essential elements', initial factor solution

	Factor		
	1	2	3
Patients and family appreciate	.823		
Completing as recommended	.799	-.368	
Sets standard other MDT	.763		
Implementing same way as colleagues	.514		-.421
Appreciated by colleagues	.440	.327	
Staffs lack of interest affects me		.441	
Patients feel unnecessary		.413	
Senior raise concerns			
Should complete same as colleagues			-.655
Having staff approval important	.330	.335	-.493

Extraction Method: Principal Axis Factoring.

Rotation Method: Oblimin with Kaiser Normalization.

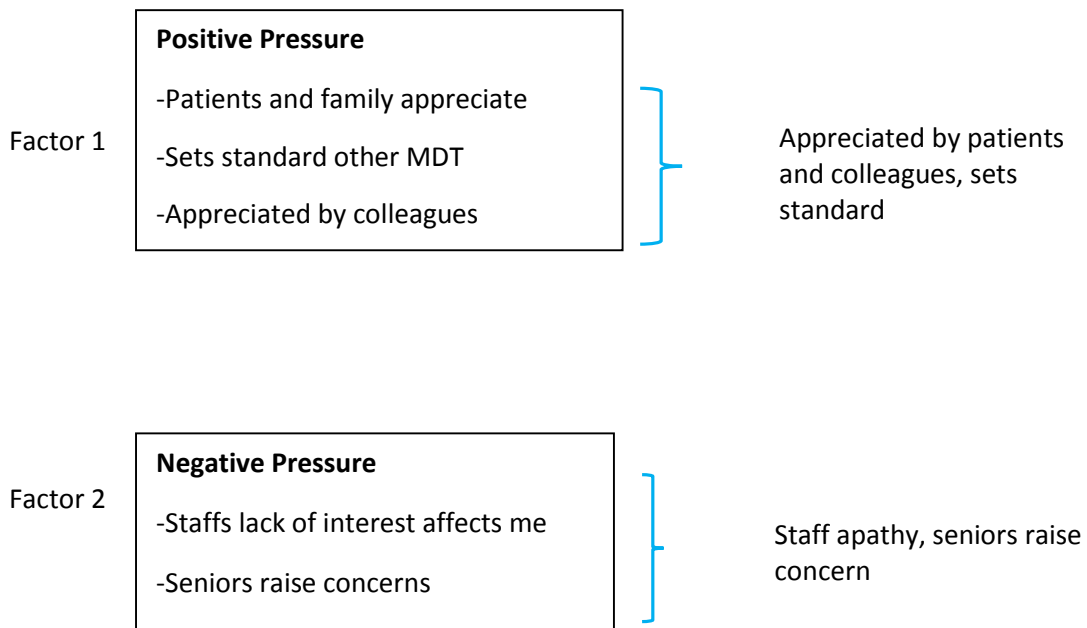
Table 16. Nurses' and HCAs' normative beliefs, 'essential elements', initial factor solution

	Factor	
	1	2
Patients and family appreciate	.871	
Sets standard other MDT	.691	
Appreciated by colleagues	.631	
Staffs lack of interest affects me		.738
Senior raise concerns		.323
Patients feel unnecessary		

Extraction Method: Principal Axis Factoring.

Rotation Method: Oblimin with Kaiser Normalization.

Figure 14. Nurses and HCAs normative beliefs, 'essential elements' interpreted



6.7.4 Nurses' and HCAs' control beliefs

6.7.4.1 Nurses' and HCAs' control beliefs, initial data extraction, 'all elements' of the checklist

Initial data extraction for 'all elements' identified three factors, which accounted for 44% of the variance, which is considered a good level of variance in a data set (Field, 2014).

6.7.4.2 Nurses' and HCAs' control beliefs, rotated solution, 'all elements' of the checklist

The initial rotated solution used an oblique rotation and resulted in the factor structure in table 17. The structure was then refined. One item 'when patient is off the ward' was deleted as the only item in factor 3. This resulted in a 2 factor rotated solution, in table 18.

The final factor solution in table 18 was interpreted two clear sets of factors of positive and negative pressure associated with implementing the checklist. All factors were judged as internally consistent. Factors 1 and 2 were above the minimally accepted Cronbach's alpha of $\alpha=.6$ (Field, 2014) and provided an internally consistent scale as composite measures of nurses and HCAs normative beliefs: Factor 1 ($\alpha=.715$) and Factor 2 ($\alpha=.659$).

Table 17. Nurses' and HCAs' control beliefs, 'all elements', initial factor solution

	Factor		
	1	2	3
Patients condition	.711		
Extensive time with one patient	.677		
Difficult in complex ward	.661		
Number of patients effects implementation	.558		
Easier to complete at night	.365		
Effective communication helps implementation		.869	
Effective delegation helps implementation		.694	
Full complement staff helpful		.411	
When patient is off the ward			.639

Extraction Method: Principal Axis Factoring.

Rotation Method: Oblimin with Kaiser Normalization.

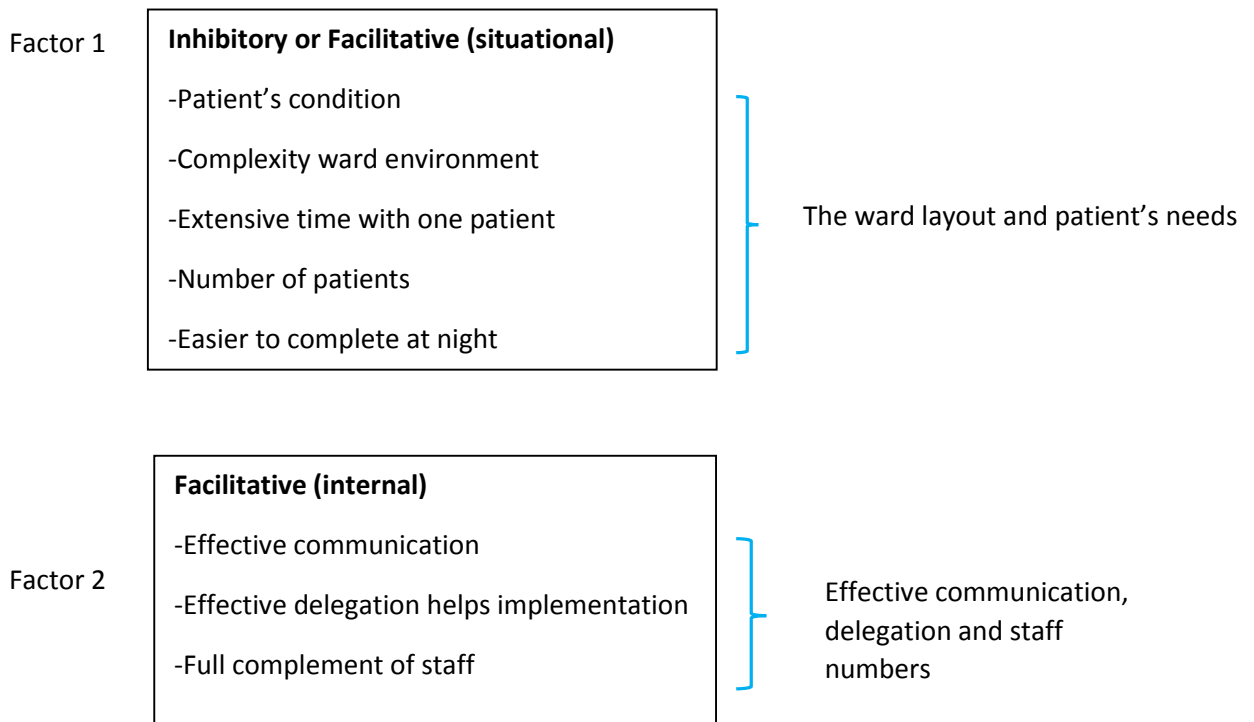
Table 18. Nurses' and HCAs' control beliefs, 'all elements', final factor solution

	Factor	
	1	2
Patients condition	.724	
Difficult in complex ward	.680	
Extensive time with one patient	.676	
Number of patients effects implementation	.572	
Easier to complete at night	.342	
Effective communication helps implementation		.897
Effective delegation helps implementation		.672
Full complement staff helpful		.404

Extraction Method: Principal Axis Factoring.

Rotation Method: Oblimin with Kaiser Normalization.

Figure 15. Nurses and HCAs control beliefs, 'all elements' interpreted



6.7.4.3 Nurses' and HCAs' control beliefs, rotated solution, 'essential elements' of the checklist

The initial rotated solution used an oblique rotation and resulted in the factor structure in table 19. The structure was then refined. One item 'patient's condition' cross-loaded on factors 1 and 3 so was deleted. This resulted in a 2 factor rotated solution, in table 20.

The final factor solution in table 20 was interpreted; two clear inhibitory and facilitative sets of factors were associated with beliefs underpinning control. Factors 1 and 2 were above the minimally accepted Cronbach's alpha of $\alpha=.6$ (Field, 2014) and provided an

internally consistent scale as composite measures of nurses and HCAs normative beliefs:

Factor 1 ($\alpha=.686$) and Factor 2 ($\alpha=.642$).

Table 19. Nurses' and HCAs' control beliefs, 'essential elements', initial factor solution

	Factor		
	1	2	3
Number of patients effects implementation	.735		
Extensive time with one patient	.546		
Full complement staff helpful	.518		
Patients condition	.445		.341
Easier to complete at night	.352		
Effective delegation helps implementation		.883	
Effective communication helps implementation		.751	
When patient is off the ward			
Difficult in complex ward			.962

Extraction Method: Principal Axis Factoring.

Rotation Method: Oblimin with Kaiser Normalization.

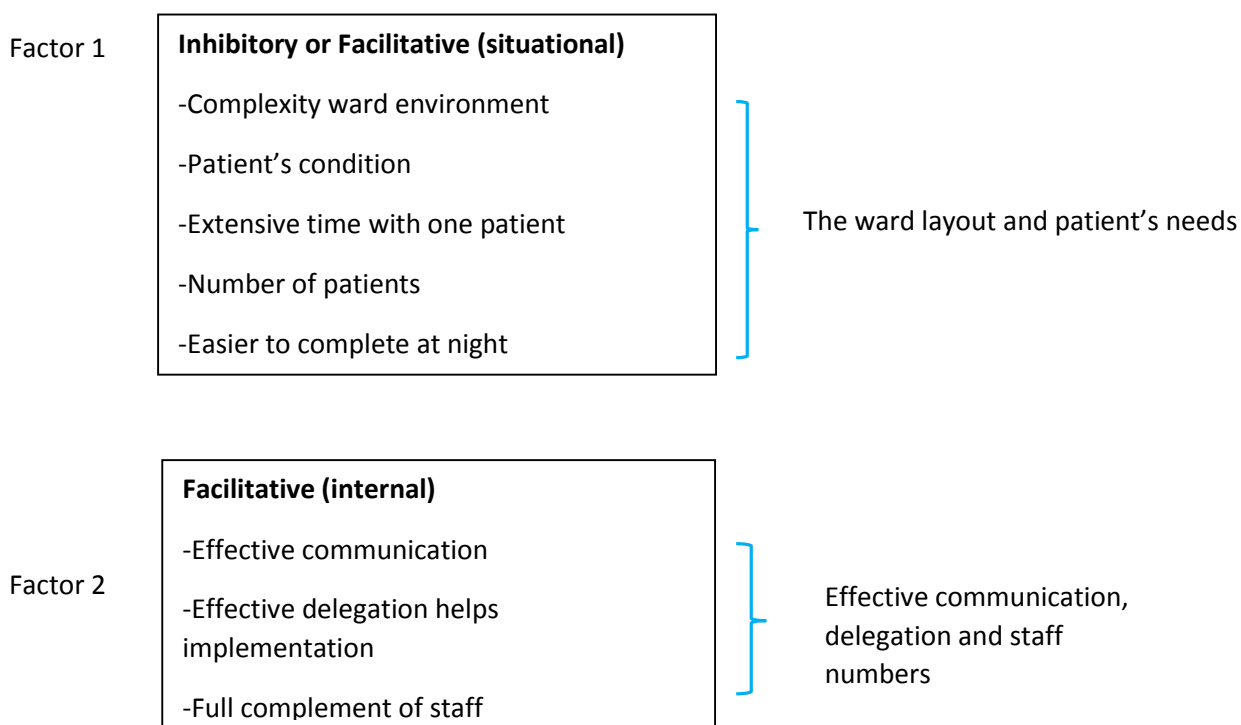
Table 20. Nurses' and HCAs' control beliefs, 'essential elements', final factor solution

	Factor	
	1	2
Difficult in complex ward	.746	
Patients condition	.701	
Extensive time with one patient	.677	
Number of patients effects implementation	.611	
Easier to complete at night	.312	
When patient is off the ward		
Effective communication helps implementation		.951
Effective delegation helps implementation		.714
Full complement staff helpful		.413

Extraction Method: Principal Axis Factoring.

Rotation Method: Oblimin with Kaiser Normalization.

Figure 16. Nurses and HCAs control beliefs, 'essential elements' interpreted



6.8 Factor analysis - summary

6.8.1 Nurses' and HCAs' behavioural beliefs

For nurses' and HCAs' there were mostly similarities but also some differences in beliefs when implementing 'all elements' and 'essential elements' of the checklist. For both behaviours, positive beliefs were context specific, as 'in complex wards' and 'providing evidence of care provision' the checklist was seen as advantageous to 're-focus care'. The usability of the checklist in helping to 'promote communication' and 'patient contact' in 'busy ward environments' was also a noted advantage.

For both behaviours, positive beliefs were offset by negative beliefs. The practicalities of implementing the checklist 'every hour' indicated drawbacks and was viewed as a

'distraction'. This produced negative feelings, such as 'creates too much stress' and 'can be an annoying and frustrating task'. As an evaluation of these consequences, items in factor 3 identified that 'more support from MDT' and an 'improved checklist design' was needed. Additional negative beliefs for implementing 'all elements of the checklist' resulted in 'just ticking boxes', and for implementing 'essential elements' as 'not ticking the checklist does not reflect care'. These differences in beliefs added credibility to the factor structure, as logically, the implementation of the checklist could partly be driven by these differences in beliefs.

Interpreted 'labelling' of each factor as a 'good tool for orientating and assessing care'; 'Insufficient time, and distraction, not reflecting care' and 'more support and better checklist required' represented the key message contained in factor items without being too abstract.

6.8.2 Nurses' and HCAs' normative beliefs

Again, for nurses' and HCAs' there were similarities but also some differences in normative beliefs when implementing 'all elements' and 'essential elements' of the checklist; which represented positive and negative influences of social pressure.

For both behaviours, positive pressure was reinforced by patients and family 'as being appreciative' and having 'patient approval', which also indicated the importance of patients and their family as source of motivation to comply with implementation of the checklist. When implementing 'all elements' of the checklist, colleagues were a source of social pressure by 'having staff approval' and 'implementing as colleagues' and

‘completing as seniors recommend’, which demonstrated an additional source of motivation not emphasised as a source of social pressure when implementing ‘essential’ elements of the checklist. Additionally, there was also a belief that ‘standards of implementation’ needed to be maintained, reinforced by patients, their family’s and colleagues.

Positive pressure was offset by different sources of negative pressure for each behaviour. Two items, ‘patients feel unnecessary’ and ‘staffs lack of interest affects me’ indicated that for some patients the checklist, perhaps was not seen as relevant, and some staff felt unsupported by colleagues when implementing ‘all elements’. An additional source of negative pressure for implementing ‘essential elements’ indicated the need to comply with senior nurses when implementing the checklist.

All elements indicated that intentional decision-making is a deliberative process and in normative beliefs can influence a motivation to comply with the implementation of the checklist. Interpreted ‘labelling’ of each factor as being: ‘appreciated by patients and colleagues’; ‘standard implementation approved and important’ and ‘patients feel unnecessary’ and ‘staff apathy’ again, represented the key message contained in factor items without being too abstract.

6.8.3 Nurses’ and HCAs’ control beliefs

For nurses’ and HCAs’, again, mixed ‘control’ beliefs were expressed and correlated highly into two distinct factors. For both behaviours, the patient and the ward environment had an inhibitive affect. Inhibitory belief items ‘complexity of ward

environment', 'the patient's condition', 'extensive time with one patient', 'number of patients' and the timing of implementation as being 'easier to complete at night', collectively correlated as potentially influential on nurses' and HCAs ability to control the implementation of the checklist. To overcome these challenges, 'effective communication', 'delegation' and 'having a full complement of staff' were factorised as being facilitative.

Interpreted 'labelling' of each factor as the 'ward layout and patient's needs' and 'effective communication, delegation and staff numbers' again, clearly represented the key message contained in factor items without being too abstract.

6.9 Nurses' and HCAs' perceptions of clinical context and practice habits

The effect of clinical context and the extent of habitual practice were compared between nurses and HCAs. The Mann-Whitney U Test was used to compare average scores on each of these variables, which provided a good fit with the data.

6.9.1 Differences in perceptions of clinical context

Frequency counts and weighted percentage scores for each contextual variable were explored for an early indication of differences. On 3 contextual variables 'Often look after patients which are confused', 'Often look after patients for over an hour at a time' and 'Patients are often unconscious and dependent' percentage scores were similar between nurses and HCAs. However, on three other contextual variables – 'The majority of patients I care for are self-caring', 'My patients are generally willing to engage' and

'Patients are acutely unwell and require assistance', nurses and HCAs frequency scores and weighted percentages were noticeably different.

Across all wards, 49.5% of HCAs agreed that their patients were not self-caring, but more nurses 61.9% viewed their patients as not self-caring. Correspondingly, over 50% of HCAs viewed their patients as being self-caring and 38% of nurses. This indicated that nurses and HCAs perceptions, on how many of their patients were self-caring, were different. Similarly, across all wards, 28.2% of nurses disagreed that their patients were willing to engage in the completion of the checklist, compared to 15.4% of HCAs, providing an insight into perceptions of communication whilst implementing the checklist.

To evaluate the significance of these differences, and to test the null hypothesis that there were no differences between nurses and HCAs, a Mann-Whitney U test (median rank difference) was carried out. The Mann-Whitney U tests confirmed that differences in the middle value between nurses and HCAs on two contextual variables, 'Majority of patients self-caring' and 'Patients willing to engage' were statistically significant ($P < 0.05$).

Table 21. Median differences clinical context

	Majority of patients self-caring	Often look after patients confused or disorientated	Individual patients over an hour a time	Patients willing to engage	Acutely unwell requiring assistance	Patients unconscious and dependent
Mann-Whitney U	6155.500	7757.500	7515.500	6378.000	7074.000	7290.500
Wilcoxon W	17033.500	18783.500	18393.500	17553.000	18249.000	12961.500
Z	3.019	-.285	-.489	-2.475	-1.508	-1.144
Asymp. Sig. (2-tailed)	.003	.776	.625	.013	.131	.253

6.9.2 Differences in nurses' and HCAs' practice habits

Differences in habit-formed care round checklist implementation behaviour were examined again by comparing significance using mean rank scores. The Mann-Whitney U test statistic produced significant differences in mean rank scores between nurses and HCAs. The higher rank scores indicated that the behaviour was increasingly habitual. Rank scores are illustrated in table 34 below.

Table 22. Differences in mean ranked scores on habitual behaviour

	RNs and HCAs	N	Mean Rank
Implementing care rounds automatically	HCA's	105	140.48
	RNs	145	114.66
	Total	250	
I do without consciously remember	HCA's	107	140.50
	RNs	145	116.17
	Total	252	
Belongs to my routine	HCA's	107	155.13
	RNs	145	105.38
	Total	252	
I do before I realise I am	HCA's	106	138.82
	RNs	146	117.55
	Total	252	
I do without thinking	HCA's	104	144.31
	RNs	147	113.05
	Total	251	
Something hard not to do	HCA's	104	141.05
	RNs	146	114.42
	Total	250	
No need to think what I am doing	HCA's	105	138.98
	RNs	147	117.59
	Total	252	

To test the hypothesis that nurses (N=146) and HCAs (N=105) were associated with statistically significant different habits, mean ranked scores were compared. As can be seen in table 35 the Mann-Whitney U test was associated with a statistically significant effect in all habit-based variables ($P < .05$).

Table 23. Nurses' and HCAs' mean rank differences habit

	Implementing care rounds automatically	I do without consciously remember	Belongs to my routine	I do before I realise I am	I do without thinking	Something hard not to do	No need to think what I am doing
Mann-Whitney U	6040.000	6260.000	4694.500	6432.000	5740.000	5975.000	6407.500
Asymp. Sig. (2-tailed)	.004	.007	.001	.019	.001	.004	.019

6.10 The association of attitude, PBC, subjective norm, habit and clinical context

To model the relationship between nurses and HCAs intentions to implement either 'all elements' or only 'essential elements' of the care round checklist, bivariate correlations were explored. A linear relationship was measured between intention and attitude, PBC, subjective norm, habit and clinical context. Spearman's rho, provided a good fit with the data, and helped to explain the proportion of variance accounted for by each variable.

6.10.1 Correlation of TPB determinants with habit, context and intention

Tables 36 and 37 present the correlation coefficients between nurses' and HCAs' intentions for both intentional behaviours. Bias corrected and accelerated bootstrap 95% Confidence Intervals are reported in brackets, which helped to indicate the likely result in the target population (Field, 2014).

Nurses' and HCAs' intentions to implement 'all elements' of the care round checklist were positively associated with most TPB predictor variables and practice habit, but not

subjective norm or clinical context. Nurses' intentions were significantly predicted by having a positive attitude, ($\rho=.332$, 95% BCa CI (.153-.512) $P<.01$), a positive perception of control (PBC) ($\rho=.309$, 95% BCa CI (.118-.490) $P<.01$), and positively reinforced practice habits ($\rho=.188$, 95% BCa CI (-.057-.408) $P<.05$). As a determinant of intention, attitude reported the highest correlation. Additional variables of clinical context were positively correlated ($\rho=.145$), but not statistically significant. This indicated that planned intentions were influenced by positive attitudes, a sense of control and reinforced by practice repetition.

When using the care round checklist to implement 'only essential elements' of care, determinants of intention were less predictive. Nurses' intentions were significantly predicted by one variable, a positive perception of control (PBC) ($\rho=.266$, 95% BCa CI -.008-.507). Clinical context was the next highest correlation, followed by attitude then habit, but these variables were not significant. Influence from colleagues (subjective norm) had a negative correlation, indicating the negative effect of colleagues' opinions. For HCAs, none of the determinants demonstrated a statistically significant result. A positive correlation in attitude ($\rho=.283$) and PBC ($\rho=.114$) were found, but were not statistically significant.

Table 24. Nurses' implementation of 'all or essential elements' of the checklist

Nurses' implementation of ALL ELEMENTS of the care round checklist						
	1	2	3	4	5	6
1 Attitude	1					
2 PBC	.339**	1				
3 SNorm	.284**	.142	1			
4 Habit	.378**	.310*	.280**	1		
5 Context	.231*	.242*	-.014	.161	1	
6 Intention	.332**	.309*	.075	.188*	.145	1
**P < .01, *P < .05						
Nurses' implementation of ESSENTIAL elements of the care round checklist						
	1	2	3	4	5	6
1 Attitude	1					
2 PBC	.118	1				
3 SNorm	.215	.153	1			
4 Habit	.308*	.380**	.291*	1		
5 Context	.263*	.382**	.091	.350**	1	
6 Intention	.121	.266*	-.155	.042	.196	1
**P < .01, *P < .05						

Table 25. HCAs' implementation of 'all or essential elements of the checklist'

HCAs' implementation of ALL ELEMENTS of the care round checklist						
	1	2	3	4	5	6
1 Attitude	1					
2 PBC	.416**	1				
3 SNorm	.128	.122	1			
4 Habit	.321**	.364**	.160	1		
5 Context	.174	.128	-.002	.044	1	
6 Intention	.407**	.255*	.169	.314**	.012	1
**P < .01, *P < .05						
HCAs' implementation of ESSENTIAL elements of the care round checklist						
	1	2	3	4	5	6
1 Attitude	1					
2 PBC	.110	1				
3 SNorm	-.023	.260	1			
4 Habit	.197	.091	.330*	1		
5 Context	.170	.116	.094	.079	1	
6 Intention	.283	.114	.006	.104	-.117	1
**P < .01, *P < .05						

For nurses, in both behaviours, significant intercorrelations were found between all TPB model predictors, positive practised habits and clinical context. For 'all elements' of the checklist, intercorrelations were found between planned and habitual decision-making

and a facilitative positive clinical context. This showed that having a positive attitude, support from colleagues and the practical ability to implement the checklist combined as positive and important determinants. HCAs' implementation of 'all elements' was determined by a similar set of intercorrelations, apart from clinical context which was not statistically significantly correlated across any variables. This suggested that the patient's clinical condition, their ability to self-care and a patient's cooperation did not influence HCAs deliberative thinking when implementing the care round.

This analysis has unearthed some interesting predictors of nurses' and HCAs' intentions and established practices. Nurses' and HCAs' intentions are similar when implementing 'all elements' of the checklist, and are reinforced by established practice (Habit). When implementing 'essential elements', nurses' intentions are influenced by their perceived ability to carry out the behaviour, whilst for HCAs, intention is low and not influenced by any determinants. These differences highlight that when the checklist is used selectively, motives to perform the behaviour are different between nurses and HCAs.

Overall, intentions and practice habits are more evident when nurses and HCAs implement all elements of the checklist as opposed to only essential elements. This suggests that practice intention is more deliberate and, practice more established when all elements of the checklist are implemented.

6.11 Exploring predictors of intention by beliefs, attitude, subjective norm, perceived behavioural control, context and habit

6.11.1 Multiple regression analysis

A regression analysis of TPB and additional variables (habit and context) for nurses and HCAs helped to determine the predictive value of each variable in the extended TPB model – identified as the model to explore in Chapter 4. To explore the value of each variable in respect to other variables in the model, a regression analysis was carried out over a series of steps.

The first step evaluated the association between beliefs (generated from the factor analysis) with attitudes, subjective norm and perceived behavioural control for each behaviour. This helped to identify which beliefs had the strongest effect on how attitudes, subjective norm and perceived behavioural control were formed. The second step then evaluated the independent contribution of attitude, subjective norm and perceived behavioural control for each behaviour. The third step examined the predictive value of habit, context, age and gender against intention for each behaviour. A final stepwise regression entered significant TPB predictors identified in step 2 with additional variables. This helped to establish the explanatory value of additional variables to each behaviour. A stepwise approach to regression analysis makes theoretical sense, as the value of TPB variables are explored first, followed by an evaluation of additional variables (Hankins *et al*, 2000).

6.11.2 The association of nurses' beliefs on determinants of intention to implement 'all elements' and 'essential elements' of the checklist

Belief-based constructs (developed from the factor analysis) were combined into mean scores and entered into the analysis as composite variables. The use of composite scores helped to generate a sufficient sample to variable ratio, as 10-15 participants are needed for each predictor variable (Field, 2014). Table 26 illustrates behavioural, normative and control beliefs underpinning nurses' intentions to implement 'all elements' of the checklist and table 27 'essential elements'.

Table 26. TPB model beliefs underpinning nurses' intention to implement 'all elements' of the checklist

	Beta	t- value	Sig	Partial R ²	Model Summaries
Attitude regressed					
-Good tool, orientating and assessing care	.684	3.635	.001	.571	R ² = .530, F = 41.265, sig = p < .001 Collinearity Tolerance = .697 VIF = 1.434
-Insufficient time, a distraction not reflecting care	-.110	1.269	.207	-.083	
-More support, better checklist required, ticking boxes	-.098	-.878	.382	-.057	
Subjective Norm regressed					
-Appreciated by patients and colleagues	.369	4.730	.001	.405	R ² = .205, F = 9.351, sig = p < .001 Collinearity Tolerance = .884 VIF = 1.131
-Patients feel unnecessary, staff apathy	.041	.522	.603	.045	
-Standard implementation approved and important	.012	.159	.874	.014	
PBC regressed					
-Ward layout and patient's needs	-.156	-1.704	.091	-.153	R ² = .116 F = 7.244, sig p < = .001 Collinearity Tolerance = .964, VIF = 1.038
-Effective communication delegation and staff numbers	.335	3.666	.001	.329	

Table 27. TPB model beliefs underpinning nurses' intention to implement 'essential elements' of the checklist

	Beta	t- value	Sig	Partial R ₂	Model Summaries
Attitude regressed					
-Good tool, orientating and assessing care	.414	3.669	.001	.422	R ₂ = .194, F = 4.906, sig = p < .001 Collinearity Tolerance = .708 VIF = 1.412
-Insufficient time, annoying stressful distraction	.254	1.668	.101	.192	
-More support, better checklist required	.012	.105	.916	.012	
Subjective Norm regressed					
-Appreciated by patients and colleagues	.426	4.644	.001	.509	R ₂ = .267, F = 11.102, sig = p < .001 Collinearity Tolerance = .860 VIF = 1.162
-Patients feel unnecessary, staff apathy	-.088	-.995	.324	-.109	
PBC regressed					
-Ward layout and patient's needs	-.033	-.277	.782	-.024	R ₂ = .116 F = 9.926, sig = p < .001 Collinearity Tolerance = .917, VIF = 1.090
-Effective communication Delegation and staff numbers	.401	4.317	.001	.477	

6.11.2.1 Nurses' attitudes regressed - behavioural beliefs 'all elements'

The behavioural belief model explained 53% of the variance in attitude which is statistically significant ($P < .001$). When nurses are busy, implementing the checklist helps to re-orientate their care to patients; which was a statistically significant finding (Beta .684, $P = .001$). The squared value of the semi-partial correlation coefficient (.571) indicated that 33% of the variance of behavioural beliefs is accredited to this belief. This illustrated the unique contribution of this variable, independent of any shared variance in behavioural beliefs.

6.11.2.2 Nurses' subjective norm regressed - normative beliefs 'all elements'

The normative belief model explained 21% of the variance in subjective norm which is statistically significant ($P < .001$). When nurses feel appreciated by their colleagues and patients, this provides a positive and statistically significant source of motivation, (Beta .369, $P = .001$). The squared value of the semi-partial correlation coefficient (.405) indicated that 16% of the variance of normative beliefs is accredited to this belief. Again, this illustrated the unique contribution of this variable, independent of any shared variance in normative beliefs.

6.11.2.3 Nurses' perceived behavioural control regressed – control beliefs 'all elements'

The control belief model explained 12% of the variance in attitude which is statistically significant ($P < .001$). Control is dependent on the nurse's ability to effectively communicate and delegate implementation of the checklist, and number of staff on the ward, this was a statistically significant source of control, (Beta .335, $P = .001$). The squared value of the semi-partial correlation coefficient (.329) indicated that 11% of the variance of normative beliefs is accredited to this belief, illustrating its unique contribution, independent of any shared variance in behavioural beliefs.

6.11.2.4 Nurses' attitudes regressed - behavioural beliefs 'essential elements'

The behavioural belief model explained 19% of the variance in attitude which is statistically significant ($P = .004$). Consistent with behavioural beliefs from implementing 'all elements', again, when nurses are busy implementing the checklist this helps to re-orientate their care to patients; which was a statistically significant finding (Beta .414,

P=.004). The squared value of the semi-partial correlation coefficient (.422) indicated that 18% of the variance of behavioural beliefs is accredited to this belief. This illustrated the unique contribution of this variable, independent of any shared variance in behavioural beliefs.

6.11.2.5 Nurses' subjective norm regressed - normative beliefs 'essential elements'

The normative belief model explained 27% of the variance in subjective norm which is statistically significant ($P < .001$). When approval is important and nurses feel appreciated by their colleagues and patients, this provides a positive and statistically significant source of motivation, (Beta .426, $P < .001$). The squared value of the semi-partial correlation coefficient (.506) indicated that 26% of the variance of normative beliefs is accredited to this belief. Again, this illustrated the unique contribution of this variable, independent of any shared variance in normative beliefs.

6.11.2.6 Nurses' perceived behavioural control regressed - control beliefs 'essential elements'

The control belief model explained 12% of the variance in attitude which is statistically significant ($P < .001$). Similar to when nurses implement 'all elements' of the checklist, control is dependent on the numbers of staff on the ward and the nurse's ability to effectively communicate and delegate implementation of the checklist, this was a statistically significant source of control, (Beta .414, $P = .001$). The squared value of the semi-partial correlation coefficient (.422) indicated that 18% of the variance of normative beliefs is accredited to this belief, illustrating its unique contribution, independent of any shared variance in behavioural beliefs.

6.12.1 The association of HCAs' beliefs on determinants of intention to implement 'all elements' and 'essential elements' of the checklist

Belief-based constructs (developed from factor analysis) were combined into mean scores and entered into the analysis as composite variables. The use of composite scores helped to generate a sufficient sample to variable ratio, as 10-15 participants are needed for each predictor variable (Field, 2014). Table 28 illustrates the beliefs underpinning HCAs' intentions to implement 'all elements' and table 29 'essential elements' of the checklist.

Table 28. TPB model beliefs underpinning HCAs' intention to implement 'all elements' of the checklist

	Beta	t- value	Sig	Partial R2	Model Summaries
Attitude regressed					
-Good tool, orientating and assessing care	.419	3.818	.001	.326	R2 =.388, F = 17.754, sig = p<.001 Collinearity Tolerance = .835 VIF = 1.198
-Insufficient time, a distraction not reflecting care	-.450	-4.136	.001	-.353	
-More support, better checklist required, ticking boxes	.106	.866	.389	.074	
Subjective Norm regressed					
-Appreciated by patients and colleagues	.109	2.266	.026	.233	R2 =.123, F = 3.878, sig p=.012 Collinearity Tolerance = .838 VIF = 1.193
-Patients feel unnecessary, staff apathy	.066	.890	.376	.092	
-Standard implementation approved and important	.094	1.137	.259	.117	
PBC regressed					
-Ward layout and patient's needs	-.054	-.549	.584	-.059	R2 =.032 F = 1.374, sig p=.259 Collinearity Tolerance = .988, VIF = 1.012
-Effective communication Delegation and staff numbers	.121	1.615	.110	.174	

Table 29. TPB model beliefs underpinning HCAs' intention to implement 'essential elements' of the checklist

	Beta	t- value	Sig	Partial R ₂	Model Summaries
Attitude regressed					
-Good tool, orientating and assessing care	.202	.926	.360	.134	R ₂ =.124, F = 1.977, sig p=.132 Collinearity Tolerance = .820 VIF = 1.220
-Insufficient time, annoying stressful distraction	-.266	-1.264	.213	-.183	
-More support, better checklist required	-.227	-1.167	.250	-.169	
Subjective Norm regressed					
-Appreciated by patients and colleagues	.053	1.787	.081	.259	R ₂ =.097, F = 2.306, sig p=.112 Collinearity Tolerance = .986 VIF = 1.015
-Patients feel unnecessary, staff apathy	.131	.967	.339	.140	
PBC regressed					
-Ward layout and patient's needs	.041	.339	.736	.049	R ₂ =.121 F = 2.887, sig p=.067 Collinearity Tolerance = .970, VIF = 1.031
-Effective communication Delegation and staff numbers	.193	2.285	.027	.331	

6.12.2.1 HCAs' attitudes regressed - behavioural beliefs 'all elements'

The behavioural belief model regressed against attitude explained 39% of the variance in attitude which is statistically significant ($P < .001$). HCAs that implemented 'all elements' of the checklist viewed the tool as a good for orientating and assessing care ($P = .001$). Although, it was also believed that there was insufficient time, and thought as an annoying and stressful distraction ($P = .001$). The squared value of the semi-partial

correlation coefficient (.326) indicated that 11% of the variance of behavioural beliefs is accredited to being a good tool, and (-.353), 12% as a stressful experience.

6.12.2.2 HCAs' subjective norm regressed - normative beliefs 'all elements'

The normative belief model explained 12% of the variance in subjective norm which was statistically significant (Beta .109, P=.001). Feeling appreciated by colleagues and patients is important to HCAs when implementing the checklist. The squared value of the semi-partial correlation coefficient (.233) indicated that 5% of the variance of normative beliefs is accredited to this belief.

6.12.2.3 HCAs' perceived behavioural control regressed - control beliefs 'all elements'

The control belief model explained 3% of the variance in attitude which is statistically significant (P=.012), however neither belief item explaining PBC was statistically significant; offering very little explanation for HCAs intentions to implement the checklist.

6.12.2.4 HCAs' attitudes regressed - behavioural beliefs 'essential elements'

The behavioural belief model regressed against attitude explained 12% of variance in attitude, but was not statistical significant (P=.132). Negative values indicated that HCAs found implementing the checklist a negative experience, and stressful, not helping to co-ordinate care, although these values were not significant.

6.12.2.5 HCAs' subjective norm regressed - normative beliefs 'essential elements'

The normative belief model explained 10% of the variance in subjective norm, not a statistically significant outcome ($P=.112$). HCAs also believed that implementation of the checklist was appreciated by patients and colleagues ($P=.081$), marginally not statistically significant, which accounted for 7% of the partial variance in this model.

6.12.2.6 HCAs' perceived behavioural control regressed - control beliefs 'essential elements'

The control belief model explained 12% of the variance in attitude, but this was not statistically significant ($P=.132$). Similar to when HCAs implement 'all elements' of the checklist, control is dependent on the HCA's ability to effectively communicate and delegate implementation of the checklist, this was a statistically significant source of control, (Beta .193, $P=.027$). The squared value of the semi-partial correlation coefficient (.331) indicated that 11% of the variance of control beliefs is accredited to this belief; a unique contribution, independent of any shared variance in control beliefs.

6.13 Summary - regression of beliefs from attitudes, subjective norm and perceived behavioural control

6.13.1 Nurses' beliefs when implementing 'all elements' of the checklist

When implementing 'all elements' of the checklist nurses judged that implementation would result in positive consequences. Positive attitudes were influenced by the belief that using the checklist would help to 're-orientate care'. Subjective norms perceptions of support were facilitated by feeling 'appreciated by colleagues and patients'. A sense

of control when implementing the checklist was facilitated by helping to 'improve delegation, communication and staff numbers'.

6.13.2 Nurses' beliefs when implementing 'essential elements' of the checklist

The same set of beliefs were expressed for those nurses that implemented only essential elements of the checklist. Significant beliefs were supported by the perception that the tool helped 're-orientate care' as a positive consequence associated with the belief, and 'approval and appreciation from colleagues was important (subjective norm). Again, 'effective delegation, communication and staff numbers' were important to facilitate and gain a sense of control when implementing the behaviour.

6.13.3 HCAs' beliefs when implementing 'all elements' of the checklist

HCAs, unlike nurses, had mixed beliefs when implementing 'all elements' of the checklist. Positive attitudes were influenced by the belief that using the checklist would help to 're-orientate care'. However, HCAs also expressed the influence of negative consequences of implementation as being 'annoying and stressful', which could indicate that HCAs have more responsibility in implementing hourly care round checks. Similar to nurses' beliefs, HCAs' subjective norms were positive, perceptions of support were facilitated by feeling 'appreciated by colleagues and patients'. However, a sense of control was not reported as significant, which again was a different outcome when compared to nurses.

6.13.4 HCAs' beliefs when implementing 'essential elements' of the checklist

HCAs, also expressed mixed beliefs when implementing only 'essential elements' of the checklist. PBC was important, the need for a sense of control was achieved from having sufficient 'staff numbers, and from positive communication and delegation'. Normative and behavioural beliefs were not significant; again, different to when HCAs implemented 'all elements' and to nurses' perceptions for the implementation of 'essential elements' of the checklist.

6.14 Regression analysis of attitude, subjective norm, PBC and additional variables

The first regression analysis examined predictors of nurses' and HCAs' attitude, subjective norm and PBC on intentional care round checklist implementation behaviours. The results of this analysis are reported in tables 42 and 43.

The TPB model explained 19.5% of nurses' intentions to implement 'all elements' of the checklist and 11.0% of 'essential elements'. Attitude and PBC were significant predictors of 'all elements' and PBC of 'essential elements'. For HCAs the TPB model explained 19.8% of HCAs' intentions for 'all elements' and 12.7% for 'essential elements'. Significant predictors of 'all elements' were attitude and 'essential elements' also attitude. This illustrated differences in nurses' and HCAs' reasoned implementation of the checklist.

Table 30. Nurses' intention to implement 'all elements' and 'essential elements' of the checklist

Theoretical Framework	Predictive Variables	N	Alpha	Mean (SD)	Beta	pr2	R2	df	F
Outcome: Intention to implement 'all elements' of the checklist									
Theory of Planned Behaviour	Attitude	114		3.97 (1.31)	.326***	.316			
	Subjective Norm	114		4.22 (1.10)	-.051	-.049			
	PBC	113		4.05 (.88)	.232**	.239	.195	3	8.776*
Theoretical Framework	Predictive Variables	N	Alpha	Mean (SD)	Beta	pr2	R2	df	F
Outcome: Intention to implement 'essential elements' of the checklist									
Theory of Planned Behaviour	Attitude	65		4.03 (1.18)	.027	.028			
	Subjective Norm	66		4.24 (1.14)	-.114	-.115			
	PBC	65		3.94 (.90)	.331**	.324	.110	3	2.483

*p<.05 **p <.01 ***p<.001

Table 31. HCAs' intention to implement 'all elements' and 'essential elements' of the checklist

Theoretical Framework	Predictive Variables	N	Alpha	Mean (SD)	Beta	pr2	R2	df	F
Outcome: Intention to implement 'all elements' of the checklist									
Theory of Planned Behaviour	Attitude	89		4.46 (1.38)	.348***	.355			
	Subjective Norm	89		4.51 (1.02)	.111	.116			
	PBC	88		4.19 (.83)	.150	.156	.198	3	6.812*
Theoretical Framework	Predictive Variables	N	Alpha	Mean (SD)	Beta	pr2	R2	df	F
Outcome: Intention to implement 'essential elements' of the checklist									
Theory of Planned Behaviour	Attitude	46		3.83 (1.54)	.313*	.317			
	Subjective Norm	47		4.48 (1.21)	-.116	-.117			
	PBC	46		4.10 (.82)	.179	.180	.127	3	.130

*p<.05 **p<.01 ***p<.001

6.15 Regression analysis habit, context, age and gender

A further research objective was to establish the role of additional variables in care round implementation behaviour. The regression analysis below illustrated the independent role of habit, clinical context and age. Gender was not regressed because nominal categories cannot be regressed (Field, 2014). The relative contribution of each of these variables was established and reported in beta weights. When regressing habit, context and age, the additional variable of habit did have a significant effect on nurses' and HCAs' implementation of 'all elements' of the care round checklist.

Table 32. Explanation of nurses' habit, context and age

Predictive Variables	N	Mean	(SD)	Beta	pr2	R2	df	F
Outcome: Intention to implement 'all elements' of the checklist								
Habit	112	3.78	(1.14)	.252*	.251			
Context	112	3.77	(.573)	.106	.108			
Age	112	3.43	(1.022)	-.004	-.004	.085	3	5.031*
Predictive Variables	N	Mean	(SD)	Beta	pr2	R2	df	F
Outcome: Intention to implement 'essential elements' of the checklist								
Habit	65	3.48	(1.14)	.027	.026			
Context	65	3.77	(1.22)	.152	.146			
Age	65	3.53	(1.09)	-.111	-.111	.026	3	.841

*p<.05 **p <.01 ***p<.001

Table 33. Explanation of HCAs' habit, context and age

Predictive Variables	N	Mean	(SD)	Beta	pr2	R2	df	F
Outcome: Intention to implement 'all elements' of the checklist								
Habit	89	4.32	(1.17)	.327*	.327			
Context	90	3.87	(.581)	-.025	-.026			
Age	90	3.62	(1.58)	-.013	-.014	.076	3	3.418*
Outcome: Intention to implement 'essential elements' of the checklist								
Habit	47	4.21	(1.12)	.145	.143			
Context	47	3.80	(.613)	-.109	-.110			
Age	47	3.46	(1.45)	.039	.039	-.036	3	.692

*p<.05 **p <.01 ***p<.001

6.16 Hierarchical multiple regression analysis predicting behavioural intention

The final regression analysis evaluated the contribution of significant additional variables against TPB significant predictor variables for each behaviour. Significant additional variables were associated with nurses' and HCAs' implementation of 'all elements' of the checklist.

Table 34. Stepwise Multiple regression analysis predicting nurses' behavioural intention

Significant Predictive Variables	Entered	Beta	Semi-Partial R2	R2 Change	df	F Change
Outcome: Intention to implement 'all elements' of the checklist						
Attitude	Habit	.063	.061	.003	2	.529
PBC						

Note. Reported beta weights are values at the final step. PBC=perceived behavioural control.

*p<.05 **p <.01 ***

Table 35. Stepwise Multiple regression analysis predicting HCAs' behavioural intention

Significant Predictive Variables	Entered	Beta	Semi-Partial R ²	R ² Change	df	F Change
Outcome: Intention to implement 'all elements' of the checklist						
Attitude	Habit	.222	.229	.044	1	4.697*

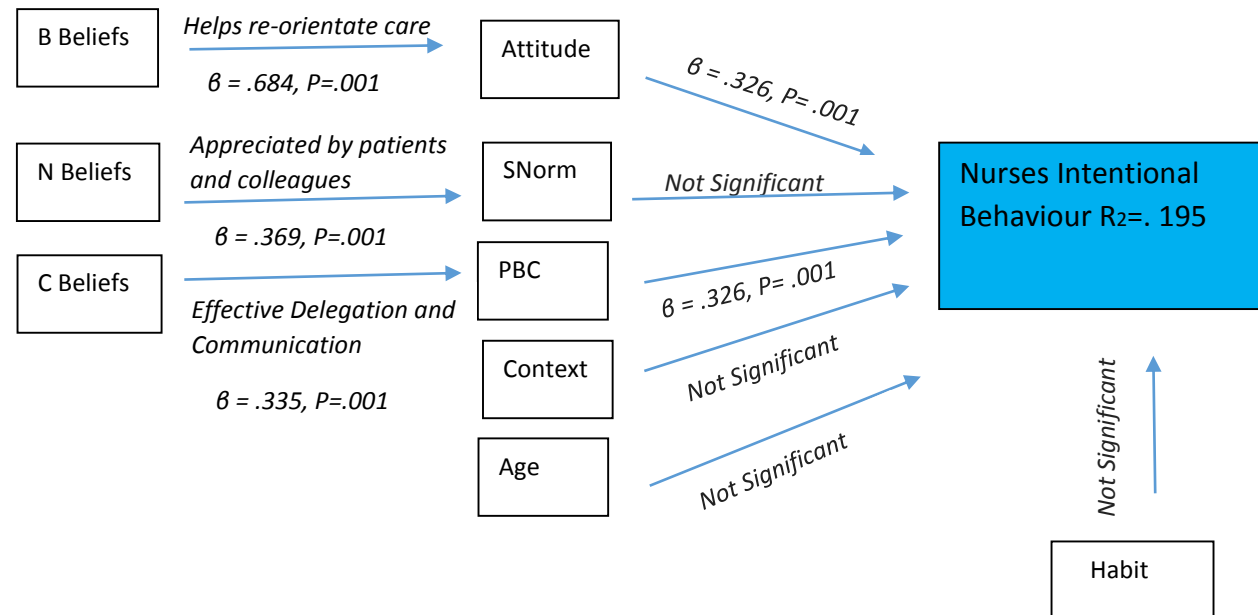
Note. Reported beta weights are values at the final step. PBC=perceived behavioural control.
 *p<.05 **p <.01 ***

For nurses, when habit was added to attitude and PBC, there was not a significant change in the regression model (F=.529). For HCAs, it was established that both attitude and habit were both significant independent predictors of HCAs' intentions to implement 'all elements' of the checklist. An increase in the R² value established that habit explained an additional 4.4 % variance in intention (F=4.697 p=<.05); this, in addition to the 19.8% explained by TPB concepts. Therefore, for HCAs, the extended model explained up to 24% of the variance in intention.

6.17 Path analysis of nurses' intentions to implement the care round checklist

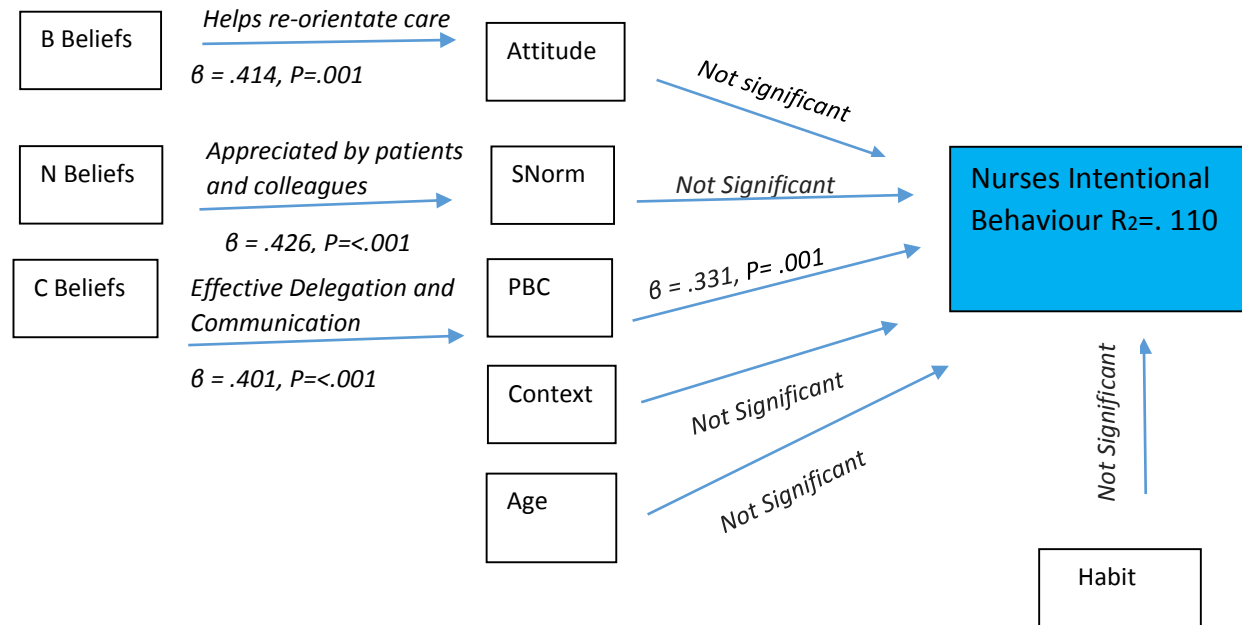
6.17.1 Nurses' implementation of 'all elements' of the checklist

Figure 24. Path analysis of nurses' intentions 'all elements'



6.17.2 Nurses' implementation of 'essential elements' of the checklist

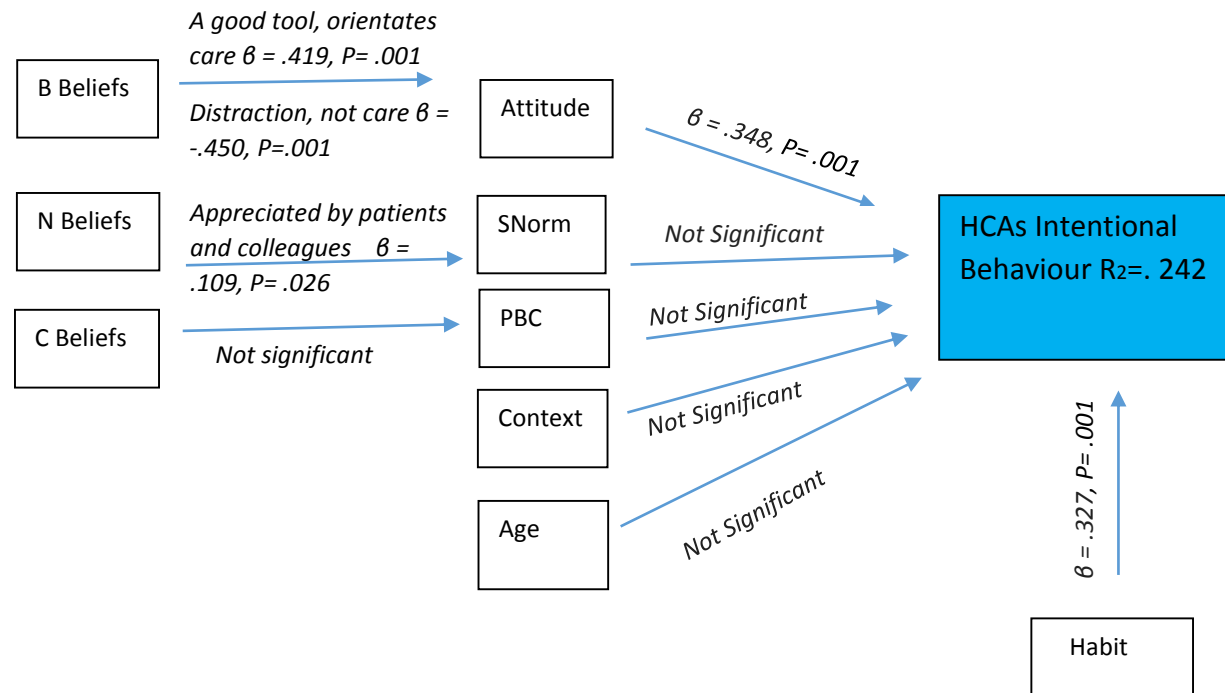
Figure 25. Path analysis of nurses' intentions 'essential elements'



6.18 Path analysis of HCAs' intentions to implement the care round checklist

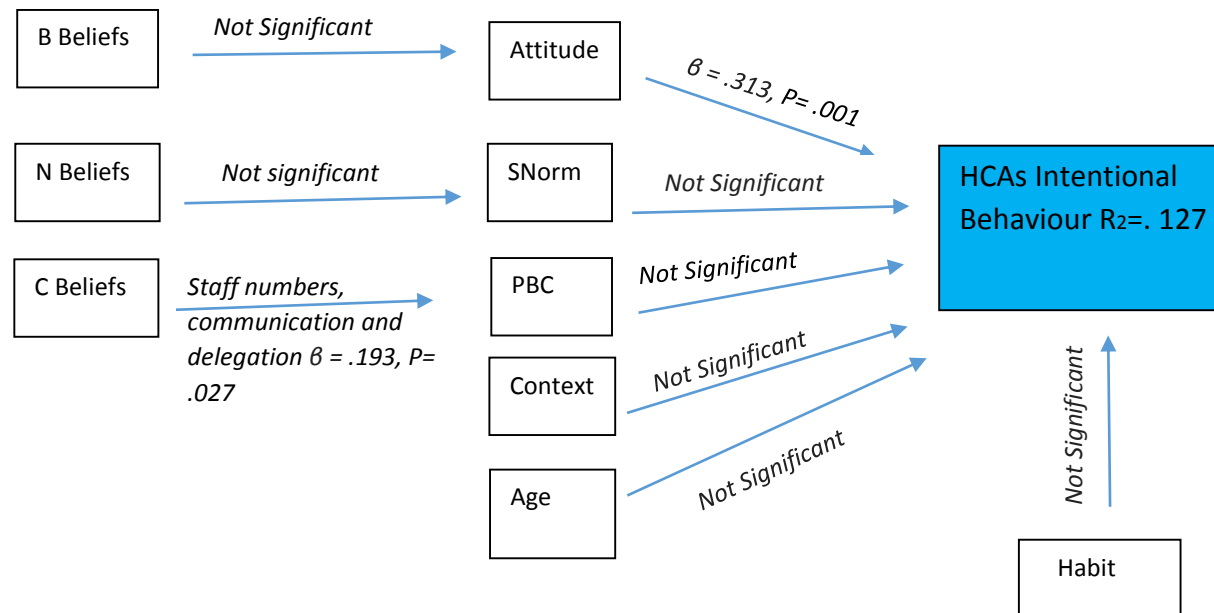
6.18.1 HCAs' implementation of 'all elements' of the checklist

Figure 26. Path analysis of HCAs' intentions 'all elements'



6.18.2 HCAs' implementation of 'essential elements' of the checklist

Figure 27. Path analysis of HCAs' intentions 'essential elements'



6.19 Overview of Results

A summary of results in table 47 provide a synopsis of the key findings.

Table 36. Results Summary

RESULTS SUMMARY
<p>Demographic Data</p> <p>-Band 5 Staff Nurses and Band 2 HCAs formed the main group of participants. Across hospital floors the ratio between these two groups remained consistent and representative of the UK nurse population.</p>
<p>Nurses and HCAs frequency of delivery of care rounds</p> <p>-A higher proportion of HCAs (54.6%) when compared to RNs (41.3%) 'Always' completed the checklist at the patient's bedside. For more than half the time more RNs (24.3%) than HCAs (13.1%) did not complete the checklist at the patient's bedside.</p>
<p>Nurses' and HCAs' intentions to implement care rounds using the care round checklist</p> <p>-Nurses and HCAs expressed positive intentions towards both behaviours. For both groups, the intention to implement 'all elements' of the checklist was higher and stronger than for the implementation of 'essential elements'.</p> <p>-Nurses intending to implement the checklist expressed 53% positive intentions, of which only 25% was in strong support. HCAs expressed more positive intentions in support of implementing 'essential elements' 62%, with 27% expressing strong intentions.</p>
<p>Intentions in the clinical area</p> <p>-Nurses' intentions did not vary by clinical area. HCAs' intentions to implement the checklist were lower on wards on the 3rd floor.</p>
<p>Nurses' and HCAs' key beliefs underpinning intention</p> <p>-Nurses' held similar positive behavioural beliefs for 'all elements' and 'essential elements' when implementing the checklist. Although, more negative behavioural</p>

beliefs were expressed when the checklist was used to implement 'only essential elements' of care.

-HCAs' that intended to implement 'all elements' of the checklist held similar positive behavioural beliefs to nurses. Although, negative beliefs were expressed when implementing 'all elements' as being 'a distraction and stressful', and that 'ticking boxes did not reflect actual care provision'. HCAs that intended to implement only 'essential elements' held similar positive beliefs to nurses, except for control beliefs which were not significant. Again, negative beliefs were associated with a task that was unrealistic and stressful.

Perceptions of clinical context and practice habits

-Perceptions of context were different between nurses and HCAs. HCAs viewed patients as more self-caring; less willing to engage.

-HCAs were found to be more habitual in their practice when compared to nurses.

The association between TPB variables and intention

-Nurses' and HCAs' intentions to implement 'all elements' were positively associated with the same predictor variables.

-Nurses' intentions to implement only 'essential elements' of the checklist were positively associated with PBC. Influence from colleagues (subjective norm) had a negative correlation. HCAs were not significantly motivated to implement 'essential care'

Nurses' and HCAs' beliefs regressed against TPB predictor variables

-Regression analysis of beliefs on direct predictors of intentions identified differences in nurses' and HCAs' motives underpinning the implementation of the checklist. In implementing 'all elements' of the checklist nurses' held positive beliefs, whilst HCAs' had mixed beliefs. In implementing 'essential elements' of the checklist nurses held mainly positive beliefs (but not a positive attitude-based belief). HCAs' beliefs toward implementing essential elements were less significant. Positive beliefs of control were expressed by 'delegation and communication', but this was the only influential belief.

Regression of TPB model variables on intention

-Multiple regression indicated that the extended TPB model for intention to implement 'all elements' was similar for Nurses and HCAs, 19.5% and 19.8%. Nurses' intentions for implementing 'all elements' were significantly predicted by attitude and PBC. HCAs' intentions to implement 'all elements' were predicted by attitude. Nurses' intentions for implementing 'essential elements' were significantly predicted by PBC. HCAs' intentions to implement 'essential elements' were predicted by attitude.

The effect of 'additional variables'

-Additional variables were not significant predictors of Nurses' intentions for either behaviour. Habit was a significant predictor of HCAs' implementation of 'all elements' of the checklist. This additional variable explained an additional 4.4% of variance for this intentional behaviour.

CHAPTER 7: DISCUSSION

7.1 Overview

The primary purpose of this study was to use the Theory of Planned Behaviour to understand how intention explains the use of research products in clinical practice. At the same time implementation of a clinical guideline was evaluated and nurses' and HCAs' intentions to implement the care round checklist compared on hospital wards. Habit, clinical context and demographic factors were also explored to provide an additional insight and comparison.

Analysis of findings focused upon providing answers to 8 key questions. Cumulatively, all questions provided an empirical insight into differences in nurses' and HCAs' intentions, habits, beliefs, perceptions of context and the value of TPB model. As a basis for exploration and explanation, these key questions provided the focus for the discussion. The significance of the findings was evaluated based on current understanding of intentional instrumental research behaviour, underpinning theory and evidence and perceptions from clinical practice.

7.2 Discussion of major findings

7.2.1 The frequency of delivery of care rounds

The care round checklist was designed to increase nurse/carer and patient contact in the acute hospital environment. To this end, the care round checklist should be implemented hourly, and guide an assessment of basic care requirements and the promotion of patient safety. As most patients, in an acute hospital environment are

cared for at their bedside, responders were asked of 'the proportion of time that the care round checklist was completed at the patient's bedside'.

Across all 24 wards the most dominant behaviour for both nurses and HCAs was to 'always' complete the checklist at the patient's bedside. However, scores for 'always' completing the checklist at the patient's bedside between the two groups was different. A higher proportion of HCAs (54.6%) when compared to RNs (41.3%) 'always' completed the checklist at the patient's bedside; more RNs (31.3%) than HCAs (29.6%) completed the checklist 75% of time. For more than half the time more RNs (24.3%) than HCAs (13.1%) did not complete the checklist at the patient's bedside, which is approximately 1 in 4 nurses or 1 in 5 HCAs: A comparative level of compliance to other areas of nursing practice (Powers *et al*, 2016).

These results indicate that a minority of nurses' find it increasingly difficult to implement the checklist at the patient's bedside. Perhaps there should be no surprise with this finding. Increasingly nurses are expected to take on multiple roles in the acute hospital environment, and at the same time coordinate and provide one-to-one care for well over 8 patients per shift (Griffiths, 2016). Guidance for safer staffing levels in acute hospitals has recommended a minimum level of 1 qualified nurse per 8 patients (Safe Staffing Alliance, 2013). In many acute hospital NHS Trusts this has not been realised (Safe Staffing Alliance, 2013), which could have obvious adverse effects in a nurses' ability to deliver hourly care rounds.

Evidence from care rounds (Fabry *et al*, 2014) suggests that a number of factors could prevent nurses 'getting round' to their patients', for example if nurses are busy with patients that are acutely unwell and need extensive one-to-one care or when patient acuity makes implementation of the checklist challenging. Whilst HCAs operate to provide an increasingly important supportive role to qualified staff in the acute hospital environment, as a part of their role they would not be expected to provide the level of care of a qualified nurse (RCN, 2015). Therefore, it is likely they would not be faced with the daily challenges as nursing staff in 'getting round' to their patients. This could partly explain the difference in nurses' and HCAs' self-report of percentage of time care rounds and the checklists are implemented at the patient's bedside.

It could be argued that not all patients will be at their bedside, some being off the ward, doing hygiene care, or in a day room. In such cases, nurses and HCAs may implement the checklist in a different environment. However, if it was noted that the round had been completed away from the bedside, it would indicate that the requirement prompted staff to find the patient and check their status or indicate why it was not possible to complete. In such cases the attempts to complete, despite the location would indicate some form of success in its aims.

7.2.2 Nurses' and HCAs' intentions to implement care rounds using the care round checklist

For nurses and HCAs, approximately two thirds indicated their intention to implement 'all elements' and one third 'essential elements' of the checklist. The same proportion of nurses and HCAs expressed positive intentions towards both care round behaviours.

For both groups, the intention to implement 'all elements' of the checklist was higher than for the implementation of 'essential elements'. This would suggest that in principle, nurses and HCAs do plan to implement hourly care round checks in full with their patients. However, their self-report of actual completion of the checklist at the patient's bedside was slightly lower when compared to their stated intention, which is not unusual for the report of intention in the TPB. Previous instrumental research utilisation studies have demonstrated that self-report intentions do not always result in an intended behaviour (O'Boyle, 2004).

There does appear to be a level of goodwill towards implementing the care round checklist, which is reflected in the level of intention reported, particularly for HCAs. The principal aims of the care round checklist to improve patient safety and patient contact morally and conceptually provide a powerful argument (Bartley, 2012). These principles would have been reiterated locally by senior nurses at the rapid spread event and reinforced (Crossfield and Pitt, 2014). However, a level of knowledge and understanding of what should be done, is not always the best predictor of intention, as when 'information-based' models are used to change clinician's intentional behaviour they are not effective (Eccles *et al*, 2012). Thus, receiving information, and knowing what should be done, does not significantly change intention; reflected in this study, as scores on self-report intention and proportion of time care rounds completed at the bedside is different.

Nurses' and HCAs' intentions were compared by hospital floor. Nurses' intentions were consistent for both behaviours across all floors. HCAs' intentions to implement

'essential elements' were stable across floors, but intentions to implement 'all elements' of the checklist were lower on floor 3 when compared to other floors. Wards on floor 3 included only specific surgical wards of the 24 wards surveyed. This suggests that HCAs' intentions could be affected by caring for patients in the surgical ward environment. Care on surgical wards requires frequent patient contact and assessment, and in such instances care rounds are often thought to be a repetition of current workload. This has been highlighted as one of the barriers to implementation of care rounds, with staff suggested they are 'already providing the care' (Dietrick *et al*, 2012). However, in intensive care, a similar environment requiring one-to-one care, care rounds have been effective and well accepted by staff, although feedback in this study was provided mainly by nurses (Aitken *et al*, 2011). These observations do raise questions as to the applicability of using care rounds in different environments. In these examples, the level of dependency and control in delivering the care round could also have promoted a positive acceptance. In this study it was demonstrated that for nurses, PBC was a key driver for intentional behaviour, which is unlikely to be the case in a controlled one-to-one delivery of nursing care in ITU. Therefore, the 'timing' of using the checklist perhaps should be reviewed, given the dependency of the patient. The level of dependency is also likely to initiate more one-to-one care and greater 'control' in the delivery of care, which would inhibit negative effects of the PBC – promoting a more reasoned approach to the use of the checklist.

In terms of measuring intention, in this study, three items ('I expect', 'I want' and 'I intend') were used to measure 'general intention', which are considered to be internally consistent to capture intention across a variety of behaviours (Francis *et al*, 2004).

However, in this study, responses to the item 'I intend', by nurses, were consistently lower when compared to other items in the 'general intention' scale. This suggested that the concept of 'intend' did not fit well with other items in the 'general intention' scale, and might have affected the reliability of this measure. Perhaps a more powerful and relevant vignette of intention measured through scenarios as a method of 'intention simulation' would have provided a more realistic measurement of intention, although the evidence supporting the use of vignettes is limited (Beatty and Beatty, 2004). This said, HCAs' self-report of response to all items in the general intention scale were consistent.

7.2.3 Nurses' and HCAs' beliefs

Nurses' and HCAs' salient beliefs were elicited by 30 semi-structured one to one interviews conducted across all hospital floors. Recognising that evaluations of a behaviour are composed of instrumental and affective beliefs, the interview schedule was designed to capture these range of beliefs (Ajzen, 1991; Francis *et al*, 2004). Despite this, most participants evaluated the implementation of care rounds as an instrumental activity, which reflected the 'functional' quality of care rounds. In the very few instrumental research utilisation studies which have elicited participants' views, 'functionality' of the behaviour is most often voiced, regardless of the behaviour, e.g.; asthma and antibiotic prescription, abortion care advice (Limbert and Lamb, 2002; Foy *et al*, 2005). Perhaps the frequency of an hourly delivery of the checklist has helped shape the perception and 'functional' quality associated with completing the checklist. Understanding what type of beliefs are associated with a behaviour is important, as belief are known to have 'affective' and 'instrumental' qualities, and targeting beliefs

can change intentional behaviour (French *et al*, 2005; Fife-Schaw *et al*, 2007); and should be recognised by those responsible for improving the uptake of care rounds.

Nurses' and HCAs' behavioural beliefs represent the values they associate with the consequences of implementing the care round checklist. Beliefs expressed described 'values' associated with consequences of performing the behaviour, and were consistent with the type of value associated with TPB behavioural beliefs. This also demonstrated the validity of the interview process which was designed to capture theoretically driven beliefs, guided by the theory-driven interview schedule (Francis *et al*, 2004).

Nurses' and HCAs' evaluation of behavioural beliefs for the different implementation behaviours were similar. Salient behavioural beliefs for implementing 'all elements' of the checklist identified 'promoting patient contact and communication' and helping 'to re-orientate their care and provide evidence of care provision' as positive consequences of implementation. Positive beliefs were offset by the problem of 'time' and 'being distracted' and 'stressed annoyed' when implementing the checklist alongside other aspects of their role. These range of beliefs illustrated some interesting clinical perceptions on the usability of the checklist. Clearly, nurses and HCAs, in principle, recognise the positive consequences of hourly contact and assessment of patients' needs, although, this is tempered by their ability to 'control' the ongoing demands imposed by their role in the acute ward environment; which is a common finding in the care round literature (Fabry *et al*, 2012).

For HCAs, a large part of their role is to provide routine care (Cavendish, 2013). Therefore, a guideline which helps to re-orientate and initiate routine care in this study was seen as being helpful. However, when implementing the checklist, nurses and HCAs expressed reservations about a tick box approach to routine care, indicating 'just ticking boxes' could portray a negative message. HCAs, in particular, take pride in the time spent with patients (Spilsbury and Meyer, 2004) and perhaps ticking boxes does not reflect well upon the direct bedside care they provide, and is thus, viewed negatively.

Given some of the shortcomings of the checklist, expressed through negative beliefs, for both behaviours there was the need to 'improve the design' of the checklist. In response to negative views, this would appear to indicate that the current checklist design does not complement the actual role of nurses and HCAs in a busy clinical ward environment. Neville *et al* (2012) highlighted that nurses faced challenges of patient acuity and time-consuming documentation, which collectively could explain negative beliefs associated with the activity of 'ticking' the checklist.

It is also suggested that routine implementation of the checklist could demotivate autonomous clinical decision-making. For example, of the nurses that implemented only 'essential elements' of the checklist, this demonstrated that nurses need to be able to use the checklist to provide an individualised assessment and be autonomous in their decision-making; a professional characteristic which can be dampened by routine practice (Semple, 2011). Negative views expressed, therefore, suggest that the current checklist design does not facilitate these processes. These views were also expressed by HCAs. Utilising guidelines and checklists in the acute clinical environment for various

clinical procedures and assessment is also a fundamental part of the HCAs role (Cavendish, 2013). Therefore, the issue of 'usability' within the context of HCAs role is equally important and should be recognised in future care round checklist design.

A further negative perception from implementing 'essential elements' of the checklist identified the problem of 'not ticking the checklist' and the perception this portrayed of actual care delivery. This could suggest, that in an effort to be expedient and autonomous when filling only 'essential elements' of the checklist, this is viewed as a necessary activity; and also a belief that 'ticking boxes' is only a report of care which has been delivered and not a reflection of actual care. Crossfield and Pitt (2012) have suggested that some staff interpreted completion of the care round checklist as 'extra work' or 'just a tick list' which supports these negative views. Certainly, negative reports associated with the activity of 'ticking the checklist' are common (Neville *et al*, 2012) and should be recognised as having a negative influence on intentions to carry out this type of guideline behaviour.

Nurses' and HCAs' normative expressed beliefs represent the extent to which their values are influenced by other people, potentially influencing how care rounds are implemented (Ajzen, 1991). Normative beliefs expressed are consistent with the type of value associated with subjective norm (Ajzen, 1991). Again, these findings help to validate an interview process, which was guided by the theory-driven interview schedule and designed to capture theoretically driven beliefs (Francis *et al*, 2004).

Similar to how behavioural beliefs were expressed, nurses' and HCAs' identified positive and negative influences of social pressure. For both behaviours, positive motivators were identified as: 'being appreciated by patients and colleagues' and 'setting a standard for how the checklist should be implemented'. Using methods of Exploratory Factor Analysis helped to group items into common meanings. However, despite the use of these methods, for some items, such as 'appreciated by colleagues' it was still unclear which 'colleagues' this related to; as perceptions of colleagues may vary between nurses' and HCAs'. Therefore, to add context to understanding the 'influence of colleagues', the complementary roles of each group as described to care round behaviour were used to explain these sources of approval.

From a HCA perspective, given the emphasis on HCAs role in providing the majority of routine care (Cavendish, 2013), it is expected that nurses and fellow HCAs support and appreciate one another's support. Certainly, the evidence suggests that completing hourly care rounds does require effective teamwork (Bartley, 2011) and is required for maintaining standards of best practice in care delivery (Cavendish, 2013). Furthermore, meeting the expectations of senior nurses when implementing care rounds was viewed positively; suggesting a positive effect of good leadership on nurses and HCAs care round intentions; a facilitative component of effective care round implementation (Bartley, 2012) and necessary for effective implementation of change (Rycroft-Malone *et al*, 2010). Certainly, nurses are conscious of the expectation of senior nurses in an organisational drive for care rounds to be implemented consistently, identified in other care round surveys (McCartney, 2009; Dietrick *et al*, 2012).

Negative social pressure for both behaviours was influenced by a degree of 'apathy' and a negative reaction toward implementing the checklist. Nurses and HCAs identified 'staff apathy', which suggest that an autonomous approach to the use of the checklist is viewed indifferently by some staff, which could result in an inconsistent approach amongst staff and ineffective teamwork (West, 2012). It is unclear as to which ward environment this relates to, but as there is apathy towards but types of implementation behaviour this could affect differences in delivery between and within health provider groups and could compound levels of apathy or even confusion. Certainly, reported criticisms of implementing care rounds have emerged, based on a misunderstanding of how care rounds should be implemented in different clinical situations and environments (Neville *et al*, 2012). Nurses and HCAs also identified that when 'all elements' of the checklist are implemented, patients' feel that this is often unnecessary, which further adds to the confusion as to when and how to use the checklist, all of which could have a negative impact on intention.

Nurses' and HCAs' control beliefs represent the extent to which there is a perception of control over performing the behaviour (Ajzen, 1991). Perceptions are developed by a combination of how difficult the behaviour is to perform and their confidence in carrying out the behaviour (Ajzen, 1991). The control beliefs expressed do identify the types of factors which could affect nurses and HCAs ability to perform the behaviour, and are consistent with the type of value associated with 'control' (Ajzen, 2006). Again, adding strength to belief-based components identified and generated.

Effective guideline implementation in nursing practice is predominantly linked to a perceived ability to carry out the behaviour (Levin, 1999; O'Boyle *et al*, 2001; Puffer and Rashidian, 2004; Maue *et al*, 2004; Foy *et al*, 2005). In this study, perceived difficulties for implementing the checklist in 'full' or only 'essential elements' for nurses and HCAs were the same. In particular, the 'ward layout', 'patient's condition' and 'effective communication and delegation' combined as facultative or inhibitory cognitive mechanisms of control.

Sawbridge and Hewison (2011) highlight that key drivers for the introduction of care rounds was to overcome the problems of hospital environments in which patients are out of view from nursing staff. This presents a challenge for nurses and HCAs, and requires both groups to be effective in delegation and communication. A review of 'care round' evidence by the National Nursing Research Unit (2012) suggests that confusion can occur as to who is responsible to implement the care round, which could have an effect on delegation and implementation. It could be argued, that this places more emphasis on the nurses' ability to control for successful implementation, given their supervisory role as care staff. Furthermore, the challenge of 'effective communication and delegation' can be compounded by patient acuity - a familiar problem with care round implementation (Neville *et al*, 2012) and the patient's condition. Therefore, providing extensive one-to-one care, whilst at the same time having to get round to their patients, can place further pressure on 'delegation' and 'communication'. This can create added pressures, particularly for junior staff, trying to develop skills in delegation (Gillen and Graffin, 2010). This is cited also as a challenge for HCAs, which amongst HCAs is seen as a developing role (Cavendish, 2013).

Having a 'full complement of staff' to get round to a 'number of patients' every hour can also affect control. This is cited as a common problem in the emerging care round evidence (Dietrick *et al*, 2012; Lyons *et al* 2015) and needs to be addressed, as good intentions can be overturned by the practicalities of the clinical situation (O'Boyle *et al*, 2001; Jenner *et al*, 2002).

7.2.4 The perceptions of context and practice habits amongst nurses and HCAs

Six items were used to measure the context of implementing the care round checklist. The content of 'context' items were developed from consultation with hospital staff and the care round literature. Context related to potential barriers and facilitators to implementation of the checklist. Questionnaire items focused on the patient's clinical condition, patient reciprocity in facilitating the completion of the checklist and time spent with the patient. Scores were compared between nurses and HCAs to understand their perception of the influence of context.

Conceptually, in nursing practice, context is recognised as important in determining the successful implementation of research and products of research (Kitson *et al*, 1998, Rycroft-Malone *et al*, 2002; 2004). In some acute nursing environments, it has also been found that more positive contexts are associated with higher reports of instrumental research use in practice (Cummings *et al*, 2010). In half of the questionnaire items, percentage scores indicated that nurses' and HCAs' perception of context was similar. Both groups identified that their patients were 'often confused', 'often looked after patients for over an hour at a time' and 'patients are often unconscious and dependent'.

However, the experience of context was perceived differently on half of the contextual variables: 'the majority of patients I care for are self-caring', 'patients are generally willing to engage' and 'patients are acutely unwell and require assistance'. Nurses' scores indicated a contextual environment which was more challenging when compared to HCAs', despite caring for the same population of patients. Statistically significant differences were found for the first two concepts based on comparing mean ranked scores.

Nurses' perception of patients as 'self-caring' was different to HCAs', viewing their patients as requiring more care. This is unsurprising as nurse professionals are educated to assess and provide a higher level of patient care within a broader and more complex scope of practice. In the acute hospital environment this is often delivered in highly pressurised situations, helping to resolve complex clinical problems (Lees, 2013). Therefore, the level of care required to implement a full care round checklist could be different to HCAs, despite referring to the same checklist, which in turn could affect intention.

Potentially, differences in how nurses and HCAs engage with patients in completing the checklists could affect their perception of 'patients being willing to engage'. In delivering patient-centred care, nurses are expected to forge therapeutic relationships with patients, which can help to promote shared decision-making (Coulter and Collins, 2011). Perhaps HCAs' perception that patients are less willing to engage is a reflection on the type and level of engagement required in implementing the checklist. Delivery of the checklist requires the carer to repeat the same questions, for example asking if their

patient is okay. This type of structured and scripted communication has been criticised as dehumanising carer-patient interactions which can be seen as a threat to this relationship (Californian Nurses Association, 2010). From a HCAs' perspective, this has seen patients as less willing to engage in this type of communication, although nurses have been able to work with the checklist to maintain positive communication.

Despite nurses' and HCAs' intentions to implement 'all' or 'essential elements' being similar, these observations illustrate that nurses' and HCAs' intentions are formed from a different contextual base. Differences in context, evidenced by a 'perception of care' and 'communication with patients' should be recognised, as how nurses' and HCAs' engage with their patient could affect their intention.

Seven questionnaire items were used to measure habit and compare differences between nurses and HCAs. A comparison of mean ranked scores on all habit items illustrated that HCAs' implementation of care rounds was more habit-orientated. A conceptual understanding of how habits are formed, particularly within the context of the workplace environment, could provide further insight into the development of habit-forming care round behaviour.

Conceptually, habit is a learnt behaviour (Blackman, 2013), and at the time of distribution of this self-report study, care rounds had been in operation for over 18 months, providing the opportunity to develop a learnt approach to implementation. Learnt behaviours are likely to be repeated if there are positive consequences and less likely to be repeated if there are negative consequences (Blackman, 2013). Based on

this conceptual understanding of 'habit', HCAs care round behaviour is positively reinforced, potentially either by nurses or by their peers.

Working in a team in a ward environment, nurses rely quite heavily on HCAs in ensuring their patient's basic care needs are being met (Lees, 2013). In this respect it is probable that ward nurses also rely quite heavily on HCAs to implement care rounds. Therefore, as indicated by the nurses' belief that implementation is 'appreciated by colleagues' it is likely that HCAs receive considerable praise and support from ward nurses and colleagues for continuously implementing care rounds. Furthermore, given the role of HCAs, potentially they can be more efficient in the delivery of care rounds and less distracted by other more complex care planning and delivery. Therefore, the principle that social rewards (e.g.; receiving praise) and salient rewards (achieving a desired goal of implementing the care round) result in positive consequences could reinforce levels of habit demonstrated in the HCA population.

In comparison to HCAs, nurses have positive intentions towards implementing care rounds, but habits are underdeveloped. Nurses' underdeveloped habit could be explained by a number of factors. Partly, this could be due to nurses being able to delegate care round duties to HCAs, which would dampen habit-forming associations. There could also be professional uncertainties as to the added value of care rounds. Several care round surveys have identified uncertainties as to the overall benefits and delivery of care rounds. Often views expressed have included care rounds being seen as: 'more work' (Dietrick *et al*, 2012); bringing a general negative attitude toward implementation (Fabry *et al*, 2014); causing a disparity between actual implementation

of care rounds and managers' perception of care rounds (Fabry *et al*, 2014), and; questioning the evidence which supports care round implementation (Dietrick *et al*, 2012). Other barriers have identified common instrumental research utilisation problems of 'lack of time', 'one more thing to do' and 'already doing it' (McCartney, 2009).

Conceivably, therefore, underdeveloped habits could suggest that nurses are still in a deliberative (intentional) phase when implementing care rounds, driven by a lack of role and professional certainty as to the benefits of implementing care rounds; as practice habits are developed from positive consequences, and not mixed consequences as described by professional uncertainties (Eccles *et al*, 2012). Nurses have also described feeling under pressure to implement and accurately record completion of the checklist (Dietrick *et al*, 2012), which could be a further source of negative reinforcement.

7.2.5 The association between nurses' and HCAs' beliefs and determinants of intention

Factor analysis identified a range of behavioural, normative and control beliefs. These beliefs were then regressed against each determinant to analyse which were the most significant. Running a regression analysis helped to explain the key beliefs which influenced intentional decision-making for each behaviour. Interventions to change behaviour are also focused upon changing beliefs (Eccles *et al*, 2012), therefore this would help focus future behaviour interventions on the most dominant beliefs.

For nurses, implementing 'all elements' and 'essential elements' of the checklist the same set of predictive beliefs regressed against predictive variables of intention. This

suggests that, despite how the checklist is used, the same challenges and facilitators drive intentions. Specifically, 'helping to re-orientate care', 'feeling appreciated by colleagues' and 'being effective in delegation and communication' had the most statistically significance influence on the formation of attitudes, subjective norm and PBC. These findings suggest that using the checklist can be a useful tool, but effective implementation is motivated by feeling supported by colleagues and the skill and potentially experience of the nurse. These findings triangulate well with 'factors' thought to influence care round behaviour (Fabry *et al*, 2014; Dietrick *et al*, 2012; Lyons *et al* 2015), and at the same time reinforce the empirical fact that intentional thinking is a motivator for this type of behaviour. These findings also re-emphasise the importance of the nurse's role and their ability to cope with the ongoing hourly implementation of care rounds.

Similar to nurses, for HCAs, implementing 'all elements' of the checklist, was facilitated by two contrasting behavioural beliefs: the perception of the checklist helping to 're-orientate care', but also offset by the barrier of viewing implementation as a 'distraction and not care'. Similar to nurses, this suggested that the checklist was valued as helping to 'get in front' of patients to provide hourly contact, but at the same time implementing all elements of the checklist was unrealistic and not a good reflection of actual care delivery. Given these difficulties, HCAs should be encouraged to be more selective in how they use the checklist. Implementing only essential elements would in theory help to speed up the process of implementation, initially recommended in local implementation (Crossfield and Pitt, 2012). Further encouragement from colleagues and senior nurses, reflective of good leadership, should also be emphasised, as 'feeling

appreciated' was an important motivator for HCAs, also recognised by the National Nursing Research Unit (2012) in their evaluation of care round behaviour.

The ability of HCAs to control for the implementation of 'essential elements' is also reliant upon the numbers of staff and their skills in delegation and communication. These beliefs highlight that HCAs find implementation challenging and feel unsupported, beliefs which have also been expressed by nurses in other care round surveys (Dietrick *et al*, 2012).

These findings also suggest that skill mix is another ingredient for success. Having adequate support staff to partner with registered nurses by making rounds on alternate hours is crucial, otherwise nurses will be taxed if they are expected to make rounds every hour. Furthermore, the team must communicate frequently to ensure follow-through with needed interventions or referrals (Halm, 2009).

7.2.6 The association of attitude, perceived behavioural control, subjective norm, habit and clinical context on Nurses' and HCAs' intentions

In this study, five variables were explored as being associated with nurses' and HCAs' care round implementation behaviour, 3 TPB variables and 2 additional variables. A correlation analysis was conducted to understand how the values in each one of these variables related to intention. The analysis showed that the values of attitude and PBC, as TPB variables, and habit were associated with intention.

When nurses' and HCAs' implemented 'all elements' of the checklist a positive statistically significant association was found with intention. Positive values of attitude, PBC and habit were associated with positive values of intention. Believing in the value of care rounds, and having the confidence and ability to carry out care rounds (and control for potential difficulties) therefore engenders a positive intention. At the same time, this cognitive state is also associated with engendering habitual behaviour. Positive associations with intention do indicate salient thinking in implementing care rounds. Nurses that are positive about overcoming the organisational challenges of implementing care rounds reflect these values (Dix *et al*, 2012).

Fewer variables were associated with the implementation of 'essential elements' of the checklist. For nurses', PBC was positively associated with the decision to implement, but for HCAs, determinants were not evident; this indicated that nurses' salient thinking is partly driven by intentional thinking. Achieving a sufficient level of control is dependent upon skills in delegation and communication. For some nurses, attaining a perceived level of control would allow for a more strategic approach to the implementation of care rounds. Being confident in organising care in complex ward environments is also a mark of autonomous practice (Skar, 2010). These findings highlight the need to develop nurses' ability to implement care rounds and carry out the skills in delegation and communication to achieve implementation goals.

Consistent with previous evidence from UK nurses' intentions to implement instrumental research products in their practice (Puffer and Rashidian, 2004), PBC and attitude, but not subjective norm, were associated with the intention to implement care

rounds. For 'all elements' there was no association evident between subjective norm and intention, and for 'essential elements' a negative but not a statistically significant relationship. These findings perhaps indicate that there is agreement amongst staff as to the expected practice in care round delivery, particularly for 'all elements'. Whilst, the more autonomous approach by nurses' in implementing 'essential elements' suggests that they are not worried by others views in how 'they' as autonomous practitioners conduct their practice.

As previously highlighted, variables of context asked questions of how the realities of the practice situation in implementing the checklist could affect intention. The ability to control these factors could potentially influence nurses' and HCAs' ability to implement the checklist. Previous instrumental research utilisation findings have identified that behaviour-specific context (such as the number of sinks) in handwashing behaviour can affect behaviour – over and above intention (O'Boyle *et al*, 2001).

Nurses' and HCAs' did not view 'context' as having a significant association with their intention to implement 'all' or 'essential' elements of the checklist. Nurses' demonstrated positive, but not statistically significant associations for both behaviours. Previous studies identified the effect of 'context' from observing actual behaviour (O'Boyle *et al*, 2001). Empirically, therefore, it appears that the effect of 'context' is understood more clearly when measuring actual behaviour, as opposed to through self-report.

The association between model variables and intention do fit with the logic of the model. The TPB proposes that levels of intention are influenced by direct determinants, in which there is a proposed linear relationship (Ajzen, 1991). When intentions are positive or high, then theoretically determinants will also be positive and high, and vice versa for lower intentions (Ajzen, 1991). Based on this hypothesis, findings in this study generally support the TPB as applied to care round behaviour; as largely positive intentions were expressed towards the implementation of care rounds, and this associated with predictive TPB variables.

Furthermore, in the TPB model, beliefs should influence attitudes, subjective norm and PBC. Therefore, you would expect to find a consistent relationship between these variables in the model. In this study, positive correlations in PBC, attitude and habit are also supported by positive beliefs. Therefore, the concepts developed to measure intention in this model provide support for the content and construct validity of beliefs generated from elicitation interviews and processes of content and factor analysis.

7.2.7 Variables that best explain nurses' and HCAs' intentional behaviour

This study set out to explain nurses' and HCAs' intentions to implement care rounds when using the care round checklist. An extended TPB model was used to explore intentional behaviour. A regression analysis explored how much each TPB variable and additional variables (habit, context and age) contributed to the explanation of intention.

Results from the narrative synthesis and systematic review identified that health care professionals' intentions are often different for the same behaviour, predicted by

different determinants. Nurses' intentions were often influenced by their perceived ability to control their environment in order to carry out their intentions. Contextual and habit forming behaviour were also identified as having an effect on intention. However, it was unclear how these variables affected nurses' and HCAs' intentional choices when implementing care rounds.

Consistent with the findings from the systematic review, nurses' and HCAs' intentional behaviour, in this study, was influenced by different determinants of PBC, habit and also attitude. These findings are also supported by Godin *et als'* (2008) systematic review of health professionals' intentional behaviour, in which beliefs about consequences (attitude), beliefs about capabilities (control) and habit were amongst the statistically significant determinants. Historically, on a general level, Godin and Kok's (1996) meta-analysis of 56 studies involving the Theory of Planned Behaviour and health-related research illustrated that attitude towards the act and PBC were found to be the most significant predictors. Furthermore, Notani's (1998) meta-analysis found PBC to be the strongest predictor. Therefore, the TPB model applied in this study demonstrated a high level of consistency with previous health care professional intentional behaviour studies.

To explore these differences, nurses' and HCAs' intentions to implement 'all elements' of the care round checklist was reviewed as this was the most predominant intentional behaviour and included the weight of the data; which is also likely to offer the most reliable insight (Rashidian *et al*, 2006).

Significantly, there were differences in nurses' and HCAs' cognitions when having to implement 'all elements' of the care round checklist. Attitude and PBC contained the highest proportion of variance in nurses' intention, suggesting a deliberative process is still evident for nurses. This deliberative process was also supported by significant behavioural beliefs and control beliefs highlighting the importance of the care round checklist in 'helping to re-orientate care' and the importance of 'effective delegation and communication'. For nurses', the significance of intentional choices indicates deliberative processes are still used to implement the checklist. By contrast, for HCAs, intentional choices and automatic behaviour, represented by habits compete as drivers for behaviour. This could be explained partly due to the HCAs clinical practice role, but also conceptually as habits.

The formation of habit-based decisions and the stability of habitual behaviour depend upon stable environments (Verplanken and Wood, 2006). The repetitiveness of the behaviour over a period of 18-24 months could explain determinants of both nurses' and HCAs' intentions to implement 'all elements' of the checklist.

A HCAs' clinical role is characterised by performing routine practice in stable environments (Cavendish, 2013), which would include the routine use of the care round checklist for hourly care round checks. Their clinical role, and being less distracted by other demands, explains a more habitual approach to care round implementation. By contrast, a nurse's role is less stable, indicated also by the importance placed on PBC and their ability to control their environment. Cognitive processes in the formation of intention are more evident in nurses when compared to HCAs. These findings highlight

the importance of 'role' in explaining intentional behaviour; a significant predictor of intention as identified by Godin *et al* (2008).

Attitude, has been identified as the most dominant concept within research utilisation behaviour (Estabrooks, 2004). In this study, nurses' and HCAs' expressed favourable attitudes towards implementing care rounds; indicating that, if clinicians hold favourable attitudes toward a specific clinical behaviour, they are more likely to engage in that practice behaviour. However, the predictability of some of the intentional determinants should be treated with caution, particularly if the behaviour is performed regularly. Weinstein (2007) outlined that a 'perception-behaviour bias' can inflate the importance of any given predictor, indicating that if a person engages in a practice behaviour already, they are more likely to hold favourable attitudes toward that practice. However, this bias is least likely in behaviours that are performed less frequently and most likely in behaviours that are performed on a regular basis (Weinstein, 2007). On this basis, it is proposed that the attitude value nurses' place on care rounds is more likely to influence intentional behaviour, compared to HCAs' attitude value, because of differences in level of activity and differences in role.

In the TPB model, for nurses' and HCAs', subjective norm was not a significant predictor for either care round behaviour. Normative beliefs for both behaviours were varied, such as feeling 'appreciated by colleagues' or 'approval not important'; however, these beliefs were not translated into statistically significant direct determinants of intention. This unpredictability is supported by some evidence. Traditionally, within the TPB, the subjective norm has not contributed significantly to the explanation of intention.

Armitage and Conner (2001) reviewed 185 studies involving the Theory of Planned Behaviour, and found the Subjective Norm construct to be the weakest predictor of intention (Armitage and Conner, 2001). By contrast, Godin *et al* (2008) in their systematic review identified 'social influences' as an important predictor in health professionals' clinical behaviour, although findings were derived from a different model of intention, the Theory of Interpersonal Behaviour. This could suggest that items designed to measure 'social influence' from alternative intentional models, and in health professional behaviour are more relevant. Therefore, future studies should potentially elicit specific 'social influences', for each respective research utilisation behaviour, as the effect could be driven by similar questions of 'norms' (Michie *et al*, 2005).

In this study 'clinical context' was not a significant determinant of intention, despite being recognised as an important predictor of behaviour (Godin *et al*, 2008). However, context can also reflect other factors in addition to environmental factors, such as the influence of multi-faceted support and the organisational climate (Meijers *et al*, 2006). Potentially, use of the Theoretical Domains framework (TDF) to identify relevant contextual factors could help in future research (French *et al*, 2012), particularly as variables which are relevant to context appear to be behaviour specific.

The effect of age as a demographic factor, in this study, was added to the regression model, but was found not to be significant. Evidence supporting the influence of demographic factors is mixed, with some studies identifying support (Godin *et al*, 1998; Godin *et al*, 2008), and others offering little supporting evidence (Kortteisto *et al*, 2010). Traditionally, the TPB model views the influence of age only through determinants of

intention and not as a direct predictor. Again future studies should elicit the potential influence of individual characteristics relative to the specific intentional behaviour, given the continued uncertainty of the supporting evidence.

7.2.8 Predictive value of the TPB as applied to implementation of care rounds

For nurses implementing 'all elements' of the checklist, the TPB model explained 19.5% of their intentions, and for HCAs 19.8%, with an additional 4.4% of intention explained by habit to a total of 24.2%. This is slightly below the average for the TPB in explaining intentional behaviour, although this can be explained by the type of behaviour explored and methodological weaknesses, which will be explored further in the conclusions.

The initial systematic review informing this study identified 18 studies which had measured instrumental research utilisation behaviour. Of the studies which used the TPB, the proportion of intention explained was normally above 30% (Bonetti *et al*, 2010). Godin *et al's* (2008) systematic review concluded that the TPB could account for an even greater 59% variance in intentional behaviour. However, this study acknowledged the TPB along with other motivational theories, and behaviours, which may have inflated the explained variance. In general health professional behaviour, explanation of intention using the TPB has been slightly lower, ranging from 30% to 40% (Godin and Kok, 1996; Conner and Sparks, 2005; Eccles *et al*, 2007).

A number of factors can affect the efficacy of prediction of intention (Godin *et al*, 2008); including: type of health professionals and behaviour categories; sample size; psychometric qualities; method for assessing behaviour; and level of correspondence

between the operational definitions of intention and behaviour. Generally, a lower prediction is normally observed among studies with smaller sample sizes (Rashidian *et al*, 2006), which was the case in this study, particularly for measuring 'essential behaviour'.

In this study, a number of measures were taken to improve the robustness of the measurement of intention. Psychometric qualities were enhanced by a rigorous elicitation of beliefs; reliable constructs of intention (Francis *et al*, 2004); and the content of operational definitions of behavioural intention modified to be more representative of actual care round activity. However, the level of intention reported by nurses and HCAs, in this study, is most likely reflected in shared responsibility in the delivery of care rounds, potentially diluting levels of individual intention. Furthermore, role differences, evidenced by differences in predictors of intention (HCAs and Habit and nurses and PBC), can further limit the effect of intention, as, PBC and habit compete as explanations for intentional behaviour (Ajzen, 1991).

Methodological weaknesses may have also impacted on the proportion of intention reported, particularly for implementing 'essential elements' of the care round checklist. Based on the variance inflation method, Rashidian *et al* (2006) recommend that a target sample of n=148 should be recruited to obtain an efficient predictive model, which was not achieved for the measurement of 'essential elements' of the checklist. Effect sizes for nurses and HCAs (11% and 13%) were small. There does appear to be an inverse relationship between sample size and predictive power in this study. The proportion of intention captured in the intentions of nurses' and HCAs' is twice as large when

compared to 'essential elements', and the sample also twice as large. As the size of the sample dictates the amount of information we have (Field, 2014), future studies should explore levels of variance captured by samples of similar size.

CHAPTER 8: CONCLUSIONS AND RECOMMENDATIONS

8.1 Focus of this study

This study set out to find answers to an emerging research problem of understanding 'intention' as an explanation for how research products were implemented in clinical practice. An extended TPB model, developed from the earlier systematic review, was used to understand intention. A further objective was to evaluate the value of the extended TPB model in explaining intention.

The care round checklist was used as a tool to address the main research problem. Nurses' and HCAs' intentions to implement a new type of instrumental research utilisation behaviour (a repeated behaviour) was explored. Applying the TPB model to this behaviour helped to develop important theoretical and clinical indicators for health providers' implementation of research products in clinical practice.

8.2 Limitations

Limitations of this study arose from both methodological issues and inherent limitations of the theory. In terms of methodology, recruitment and sample size affected the ability of the model to fully explain the target populations' intention. The TPB also has limitations in fully explaining behaviour, as intentions are only a proxy measure of behaviour (Eccles *et al*, 2005).

The researcher, interviewees and professional nurse colleagues identified that care round implementation was normally completed by performing two distinctly different

behaviours: 'all elements' and 'essential elements' of the checklist. To accurately represent and measure intention, these behaviours needed to be identified and delineated, as intentions can change in relation to subtle differences in behaviour (Ajzen, 2006). Two intentional behaviours were, therefore, measured and compared between the two groups.

However, recruiting a sufficient sample size to test for statistical significance, for each behaviour, was a challenge. Sufficient numbers were generated to explore respondents' implementation of 'all elements' of the checklist, but greater numbers were required for a more reliable evaluation of 'essential elements'. Future research should attempt to monitor the numbers of responders for each behaviour, increasing the statistical power, or alternatively focus on just one intentional behaviour.

Recruitment was a challenging process and resulted in a moderate response rate (Badger and Werret, 2005). Future studies should monitor sufficient numbers to evaluate intention for specific behaviours and should also consider recruiting a randomly selected sample, to enhance the generalisability of findings to the target population. Respondents, in this study, were self-selecting which was a limitation.

In principle, self-selecting samples can introduce bias into the sampling frame as responders may be different to non-responders (Wood and Ross-Kerr, 2014). Therefore, in this study it was unclear if the intentions of those participating was different to those that did participate, which is a noted limitation.

By chance, the distribution of characteristics of age, band and gender were representative of the target population. However, in TPB studies using non-probability could further affect response, as often it is difficult to recruit for large enough samples due to lengthy questionnaires (Francis *et al*, 2004). In this study the final sample size was achieved after repeated visits to the data collection site. The total sample size therefore, represented what was achievable at the point of data collection. To increase response rate, the number of questionnaire items should be reduced which should help to increase participation. As suggested, the identification of key beliefs from factor analysis (as in this study) should help to reduce the number of belief-based questionnaire items and, in turn, in future populations increase the response rate.

A further limitation was identified in the measurement of clinical context. In this study the evaluation of the variable 'clinical context' was limited. Comparisons between nurses' and HCAs' perceptions revealed some interesting differences, however, the sample size was insufficient in evaluating how these differences might vary in different ward environments. Whilst context independently did not predict intention, the concept 'context' requires further exploration as perceptual differences between groups are evident. As a determinant of implementation behaviour, context has not been clearly expressed (Huijg *et al*, 2014), therefore, the effect of 'context' could be informed by conceptual understanding (Meijers *et al*, 2006), or through qualitative methods of enquiry at an elicitation stage of generating beliefs.

Outcomes from the initial systematic review identified that some instrumental research utilisation intentions are not always carried through into actual action, and that

intentions are not 'observed' in actual behaviour (O'Boyle *et al*, 2001). Although the measurement of actual behaviour was not an objective of this study, the use of observation to clarify some of the self-reported explanations for nurses' and HCAs' intentions would help to triangulate evidence of care round implementation behaviour.

In terms of using the TPB there are some limitations. The theory is designed to measure very specific actions. Thus, the theory only allows for generalizability to that specific action and not related behaviours (Ajzen, 2006). In this instance, the theory was used to measure two types of care round implementation behaviour. The findings of this study are only relative to the implementation of 'all elements' or 'essential elements' of the checklist. Similar behaviours could be evident but could be described differently, and therefore findings should be applied cautiously.

8.3 Conclusions

8.3.1 Contribution of an extended TPB model in explaining intention

Overall, in this study, the trusted TPB model has lacked sophistication to sufficiently explain nurses' and Health Care Assistants' intentions to use the care round checklist; particularly compared to earlier studies in which intention can explain up to 59% of health professional behaviour (Godin *et al*, 2008). Nonetheless, applying the extended TPB model has demonstrated the relevance of 'intentional thinking' in nurses' and HCAs' use of guidelines, and highlights opportunities for further development and testing of the model.

A modest proportion of intention explained intentional behaviour, 20% for nurses and 24% for HCAs, moderated for nurses' by their attitude and perceived ability to control the behaviour, and for HCAs' by attitude and practice habit. Therefore, it is recommended that, conceptually, the extended model generated from the systematic review was underpowered, indicating that further variables may increase the predictive power of intention. Adding variables to explain intention can improve the predictive value of behaviour (Ajzen, 1991); and is an effective approach to explain intentional instrumental research utilisation, if the variables are carefully chosen (Beatty and Beatty, 2004).

Godin *et al* (2008) in their review of health professionals' intentional behaviour identified 'moral norm' and 'role and identity' as potential moderators. In this study, these variables were not included, or tested, as in the earlier systematic review (Appleby *et al*, 2016), they were not identified as dominant predictors of intention. Potentially, then, to increase the explanatory power of intention, future studies should include and test the significance of these variables. In particular, differences in intentions driven by 'role', important findings identified in this study, showed that this variable should be further explored.

A strength of this study, and the model, is that in a behaviour which requires clinical judgement in its implementation, the model was reliable in capturing these concepts, demonstrating its relevance. In health professional behaviour, where decision-making requires the health professional to make reasoned decisions, dominant predictors of intentional behaviour are often influenced by attitude and PBC (Jenner *et al*, 2002;

Puffer and Rashidian, 2004; Godin *et al*, 2008). This fits with the view that professional judgement should be informed by evaluating the consequences of one's behaviour and one's ability to perform the behaviour. The model, therefore, demonstrated validity in the testing of model concepts in a new instrumental research utilisation behaviour.

Further relevance and consistency of the model was established by the reported effect of demographic factors on intention. The sample size determined (Field, 2014) that only age, as a demographic factor, was explored. The regression of age against intention was not statistically significant. This finding was consistent with the conceptual understanding of the theory (Ajzen, 1991), wherein any other influences on behaviour are held to have their impact by influencing components of the model (Puffer and Rashidian *et al*, 2004).

The flexibility of the extended model was also demonstrated in the measurement of habit. Implementation of hourly care rounds are a repeated behaviour, often performed in stable environments over several months, likely to result in habitual behaviours. HCAs 'working environment', in terms of their role, is quite stable and task-orientated (Cavendish, 2013). Given this, the extended model and items measuring habit demonstrated validity and reliability in capturing the effect of habit on intentional behaviour and should be applied in future instrumental research utilisation. The use of habit items in this study also further validates the contemporary understanding of the construct (Gardner *et al*, 2012) when applied to nursing clinical practice, in which repeated behaviour becomes an automatic response to consistent cues of exposure.

The relevance and importance of developing beliefs as meaningful explanations of intention was also demonstrated, as 'salient beliefs' indicative of intentional thinking were supported by the wider care round literature. This is also considered important for changing intentional behaviour. Curtis *et al* (2010) propose that 'messages' contained in 'beliefs', if targeted, can provide a clearer focus for persuasive communication interventions, and as a means to identifying and targeting discriminatory beliefs; which provides better potential for persuasion in an intervention. Unfortunately, there is no available evidence to establish if this approach is effective to change instrumental research utilisation, although focusing interventions on 'beliefs' to change general health behaviours has been effective (Fishbein and Ajzen, 2010), so should be encouraged.

Unfortunately, very few studies which have explored instrumental research utilisation behaviour have elicited beliefs (Foy *et al*, 2005); which is perhaps a reflection of the extra empirical workload required to generate beliefs. However, this should be seen as a weakness, because, as has been stressed, beliefs are important components in understanding intention, and should be targeted to change behaviour (Fishbein and Ajzen, 2010).

The increased emphasis on how best to reliably elicit beliefs (Darker *et al*, 2007), in terms of the order of either 'affective' or 'instrumental' questions in collecting qualitative data, further illustrates the attention given to generating beliefs to fully understand intention. The type of questions posed (affective or instrumental) were considered in this study, although question ordering used the standard format (Francis *et al*, 2004); as evidence

examining the effect of 'question order' suggests that the standard approach does not bias responses (Darker *et al*, 2007).

8.4 Implications

8.4.1 Suggestions for future research

Moving forward, it is clear that understanding health professionals' intentional instrumental research utilisation behaviour is still at an early stage of empirical and theoretical development. However, findings generated in this study, indicate, there is an opportunity for theoretical and methodological development of the TPB to better understand intention. Several activities would make a positive contribution and should include: testing the current model and data collection tool; increasing the power of future studies; identifying relevant, reliable and valid variables; eliciting beliefs; and, recognizing the weaknesses in the measurement of model concepts, all of which are important empirical avenues which should be explored.

Empirical development should involve testing the current model in care round behaviour, in a different but similar target population, to establish the true effect of intention. In this study, reported levels of intention could be biased towards the sample, as self-selecting samples are not truly representative of the wider population (Polit and Beck, 2010). Therefore, further testing of the model will help to understand the true effect of intention, as sampling variation could make the prediction of intention unreliable. Further testing should also evaluate the reliability of the factor structure of beliefs generated through exploratory factor analysis. A confirmatory analytical approach could be used to confirm if new data was a good fit with the belief structure

generated for behavioural, normative and control beliefs. Confirming belief-based factors would also help refine the 'Care Round Intention' questionnaire tool, reducing the number of belief-based question items and, in turn, potentially increasing the return rate; collectively, an important empirical objective for improving robustness in survey design (Oppenheim, 1992).

The power of any model is dependent on the predictive value and effect size of its concepts, which has been demonstrated with health professional behaviour (Godin *et al*, 2008). As identified, the current TPB model should be extended to include additional concepts of moral norm, role and identity and context, as this could provide a fuller explanation of intention. Pragmatically, levels of variance captured in extended models could then be compared and evaluated in similar populations and implementation behaviours.

Using valid scales of measurement, in this study, captured the predictive value of concepts. Tried and tested measures of 'habit' (Gardner *et al*, 2010) delineated nurses and HCAs practice related habits, capturing a repeated behaviour in the HCA population. Similar, reliable measures of determinants of intention should be identified, or developed. Some of the items generated by the 'Determinants of Implementation Behaviour Questionnaire' (Huijg *et al*, 2014) could be suitable, wherein a range of psychometric properties and measurement items have been developed. It is suggested, that more can be learnt about intention by identifying and testing the relevance of additional determinants in such tools (Huijg *et al*, 2014).

For example, 'professional role' could be applied and tested to understand its predictive power to intention. Findings from this study suggest that intentions do vary across health providers, indicating, therefore, that 'role and identity' should be a compulsory measurement of intention if various providers are involved in implementing the same guideline. The importance of 'role and identity' as a determinant of intention, has also been identified by the use of alternative data collection procedures. In a realist synthesis of evidence, Gillespie and Marshall (2015) identified that the sustained use of surgical safety checklists is discipline specific. This demonstrates the usefulness of validating behavioural determinant concepts through a triangulation of empirical methods, which should be encouraged.

Regardless of the empirical approach, the validity of data collection methods should be established. When measuring intention, potential limitations in applying data collection tools should be acknowledged. For example, in Huijg *et als'* (2014) determinants of implementation questionnaire, TPB constructs and corresponding questionnaire items have been taken directly from theories, without thorough testing of model concepts; as applied to different behaviours, which is a limitation of such questionnaires.

For example, empirically, intention can be measured by three different methods (Francis *et al*, 2004). In this study, general intention was measured. For some responders in this study this may have affected how intention was reported, with possible under-reporting. An alternative method of measuring intention is 'intention simulation' which describes the context of the clinical situation in a short paragraph preceding questions of intent, which can better reflect the clinical situation and environment. Using this data

collection method could help to contextualise a more realistic 'clinical environment' in which intentions are formed, and has shown to increase the predictive value in the measurement of intention (Francis *et al*, 2004). Therefore, to reiterate, to fully understand 'intention', some items in the Determinants of Implementation Behaviour Questionnaire (Huijg *et al*, 2014) should be used with caution, as recommended standardised items are unlikely to fully represent intention and reduce the power of intention in explaining implementation behaviour. Moral norm, also does not feature as a distinct construct in Huijg *et als'*, (2014) generic questionnaire, and should be included. Perceptions of 'moral norm' could be generated as part of the qualitative elicitation interview phase, to establish the relevance to the implementation behaviour in question. This is recommended as the elicitation phase in this study helped to identify powerful beliefs, and direct questions on 'moral norm' has received little empirical attention in intention-based literature (Beatty and Beatty, 2004).

This study has also shown the importance and relevance of generating beliefs, to fully understand determinants of intention. Recommended questionnaire items to measure all constructs in generic behavioural determinant questionnaires do not include beliefs (Michie *et al*, 2005; Huijg *et al*, 2014). So, wider use of qualitative methods to inform questionnaire development is recommended, as use of qualitative methods has supported that this adds rigour to the tool developed in this study. Limitations, thus, of questionnaires with only direct measures should be noted.

On a more general level, it is further highlighted that the type of instrumental research utilisation may determine the explanatory value of intention. Levels of intention in more

specific guideline-driven clinical behaviours such as handwashing and glove use, using simpler actions resulted in higher levels of intention (Godin *et al*, 1998; 2000; O'Boyle *et al*, 2001). Implementation of the care round checklist with the patient requires patient interaction and assessment, in which the nurse or HCA would use a crafted set of behaviours to fully apply the checklist. Perhaps, the act of completing the checklist is seen as only one behaviour, nested within a range of behaviours. Therefore, careful selection of variables which could potentially influence intention should become a central focus.

8.4.2 Implications for clinical practice

Implementation of care rounds using care round checklists is a commonplace activity in many UK and international acute hospital environments. Evidence, therefore, explaining differences in how nurses and HCAs implement the care round should help focus future interventions in this area of practice.

Intention is represented by salient thinking which in turn influences behaviour and action (Ajzen, 2006). The current model of intention, as applied to nurses' and HCAs' implementation of the care round checklist, explained a modest proportion of intentional behaviour, which can partly explain facilitators and inhibitors in its implementation. Intentions are driven by beliefs and nurses and HCAs were found to hold different beliefs when implementing care rounds. Nurses' intentions were driven by their ability to control their working environment, specifically their ability to delegate and communicate effectively. HCAs' intentions appear to have been conditioned by the repeated act of delivering the 'round', wherein intentional behaviour was

predominantly driven by practice habits. Interventions, therefore, should focus on helping nurses to be effectively delegate and engender positive HCAs' habits when carrying out 'rounds'.

For nurses, in addition to the importance of 'control', it is suggested that the modest level of intention explaining care round behaviour, in this study, is partly explained by the shared responsibility of HCAs and nurses for implementing the round. Potentially, the level of 'intention' is compounded by a care round checklist design which does not delineate between a nurse's responsibility and HCA's responsibility in implementing the checklist. Therefore, the uniformity of the checklist design may suppress the health care provider's intention. These differences indicate that clinical role could be a driver for how the care round checklist is implemented and, the checklist should be re-designed to reflect these role differences. Presently, the skills and knowledge base which separates these two groups is not currently recognised in the checklist design.

Findings also suggest that implementation of care rounds is better suited to the HCA's role and routine, being disruptive to nurses' role and practice. A HCA's role is characterised by providing routine task-driven care (Cavendish, 2013), therefore the implementation of care rounds has become part of HCAs' routine practice. By contrast, nurses' have found the re-introduction of a routine practice more challenging, unsurprisingly. For nurses', having to implement an hourly checklist with the patient, whilst simultaneously having to resolve complex clinical scenarios, represents a challenge. Nurses' ability to control this situation and implement hourly rounds has required effective communication and delegation, which should be recognised as part

of the challenge of maintaining effective 'rounding' and built into the future planning and delivery of care rounds.

The original conception of the care round was to ensure patients were seen on an hourly basis to prevent risks such as falls and pressure ulcers and to promote patient reassurance and satisfaction by increasing the frequency of nurse-patient contact (Meade *et al*, 2006). However, the challenges faced by nurses in implementing rounds suggest that the current organisation of care should be adapted to the realities of clinical role in the acute ward environment. Given these challenges, it is suggested that the care round checklist be re-designed to reflect the patient's level of risk and level of care required. In turn, nurses could focus their 'rounding' on patients that were higher risk, and HCAs on patients at lower risk. This would reduce the number of patients nurses would have to 'round' on, each hour, and also ensure that patients that were low risk could be seen by HCAs. This would reduce the need for ongoing delegation and effective communication and ensure 'rounding' for nurses and HCAs was targeted to patients with either high or low patient safety risk.

The National Nursing Research Unit (2012) has identified that a major problem with the implementation of care rounds comes from a lack of understanding as to who is responsible, when and for which patients, with implications for the skill mix of nurse staffing. Changing the checklist design, as recommended, could help overcome these problems and the intention to implement care rounds.

8.5 Final recommendations

The central focus of this project, as a case study of 'intention', was to explore the value of an extended model of TPB in explaining intentional behaviour. Empirically and theoretically, study goals were achieved as some original insight into intentional decision-making was achieved. However, understanding how intentions are formed is a challenging and research-intensive experience which should also not be underestimated. Future empirical work should focus on the necessary building-blocks recommended for future empirical enquiry. This should ensure that exploring future concepts related to instrumental research intention is a more efficient process.

It has been recognised that the 'net' needs to be cast further to fully understand instrumental research utilisation intentions (IRU). However, when using generic implementation questionnaires to measure intention and determinants of intention, limitations, as identified must be considered. Therefore, theoretically, as applied to the use of research products, intention-based constructs still require significant testing, to understand their true value.

With a focus on clinical practice, the findings of this study should be of interest to nurses and HCAs nationally and internationally. The cognitive expressions of intent formed by nurses and HCAs have discipline specific meaning. This is important, particular when trying to change health providers' behaviour, as interventions can be targeted for each provider group. Without this evidence, generic interventions designed to change health providers' thoughts and viewpoints are likely to be unsuccessful.

The focus of this project has been on one guideline behaviour, with a focus on individuals' behaviour. The inherent appeal of understanding intention is that, theoretically, all outside matters of interest are channelled through one's intention. Intention, therefore, has the final word in explaining behaviour. This said, given the complexities of working in acute hospital NHS wards, the wider context of delivering care should be acknowledged, as this is likely to have an effect on intentional behaviour.

These include the role of managers relative to clinicians and health professionals, as guidelines provide metrics which may be used as a management tool for assessing standards and quality of care. The origin and legitimacy of guidelines may also be an important determinant of staff intentions. Wider issues, therefore, around the assessment of quality and the interface between different levels of staff also underlie much of this project. Such issues should be taken into account in future measurement of instrumental research utilisation behaviour, observing the effect in different clinical environments.

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APPENDIX A. SYSTEMATIC REVIEW SEARCH STRATEGY

CINAHL

1. CINAHL; exp NURSES/; 119016 results.
2. CINAHL; nurs*.ti,ab; 282094 results.
3. CINAHL; exp NURSING PRACTICE/; 32487 results.
4. CINAHL; 1 OR 2 OR 3; 340808 results.
5. CINAHL; INTENTION/; 1066 results.
6. CINAHL; intent*.ti,ab; 11690 results.
7. CINAHL; exp ATTITUDE/; 151643 results.
8. CINAHL; NURSE ATTITUDES/; 13797 results.
9. CINAHL; exp ATTITUDE OF HEALTH PERSONNEL/; 35408 results.
10. CINAHL; "perceived social norm*".ti,ab; 27 results.
11. CINAHL; SOCIAL ATTITUDES/; 2955 results.
12. CINAHL; BEHAVIORAL RESEARCH/ OR exp SOCIAL BEHAVIOR/; 9617 results.
13. CINAHL; PEER PRESSURE/; 400 results.
14. CINAHL; "social attitude*".ti,ab; 92 results.
15. CINAHL; "social behaviour*".ti,ab; 198 results.
16. CINAHL; "social behavior*".ti,ab; 397 results.
17. CINAHL; (determinant* adj5 behaviour*).ti,ab; 201 results.
18. CINAHL; (determinant* adj5 behavior*).ti,ab; 393 results.
19. CINAHL; 5 OR 6 OR 7 OR 8 OR 9 OR 10 OR 11 OR 12 OR 13 OR 14 OR 15 OR 16 OR 17 OR 18; 168962 results.
20. CINAHL; RESEARCH, NURSING/ OR CLINICAL NURSING RESEARCH/ OR EDUCATION, NURSING, RESEARCH-BASED/ OR NURSING PRACTICE, RESEARCH-BASED/; 18058 results.
21. CINAHL; (research adj5 utilis*).ti,ab; 245 results.
22. CINAHL; (research adj5 utiliz*).ti,ab; 1477 results.
23. CINAHL; (research adj5 transfer*).ti,ab; 237 results.
24. CINAHL; exp NURSING PRACTICE, EVIDENCE-BASED/ OR exp PROFESSIONAL PRACTICE, EVIDENCE-BASED/; 26643 results.
25. CINAHL; (evidence ADJ based adj2 practice*).ti,ab; 5978 results.
26. CINAHL; 20 OR 21 OR 22 OR 23 OR 24 OR 25; 45205 results.
27. CINAHL; 4 AND 19 AND 26; 2048 results.
28. CINAHL; 27 [Limit to: (Language English)]; 1931 results.
29. CINAHL; exp MOTIVATION/; 28209 results.
30. CINAHL; 19 OR 29; 188817 results.
31. CINAHL; 4 AND 26 AND 30; 2362 results.
32. CINAHL; 31 [Limit to: (Language English)]; 2235 results.

Additional Search Terms: Guidelines, HCPs, Theories

1. CINAHL; exp NURSES/; 127737 results.
2. CINAHL; nurs*.ti,ab; 298279 results.
3. CINAHL; exp NURSING PRACTICE/; 35116 results.
4. CINAHL; 1 OR 2 OR 3; 361593 results.
5. CINAHL; INTENTION/; 1314 results.
6. CINAHL; intent*.ti,ab; 12911 results.
7. CINAHL; exp ATTITUDE/; 166293 results.
8. CINAHL; NURSE ATTITUDES/; 14920 results.
9. CINAHL; exp ATTITUDE OF HEALTH PERSONNEL/; 38604 results.
10. CINAHL; "perceived social norm*".ti,ab; 31 results.
11. CINAHL; SOCIAL ATTITUDES/; 3362 results.
12. CINAHL; BEHAVIORAL RESEARCH/ OR exp SOCIAL BEHAVIOR/; 11151 results.
13. CINAHL; PEER PRESSURE/; 423 results.

14. CINAHL; "social attitude*".ti,ab; 102 results.
 15. CINAHL; "social behaviour*".ti,ab; 232 results.
 16. CINAHL; "social behavior*".ti,ab; 436 results.
 17. CINAHL; (determinant* adj5 behaviour*).ti,ab; 234 results.
 18. CINAHL; (determinant* adj5 behavior*).ti,ab; 431 results.
 19. CINAHL; 5 OR 6 OR 7 OR 8 OR 9 OR 10 OR 11 OR 12 OR 13 OR 14 OR 15 OR 16 OR 17 OR 18; 185847 results.
 20. CINAHL; RESEARCH, NURSING/ OR CLINICAL NURSING RESEARCH/ OR EDUCATION, NURSING, RESEARCH-BASED/ OR NURSING PRACTICE, RESEARCH-BASED/; 18839 results.
 21. CINAHL; (research adj5 utilis*).ti,ab; 274 results.
 22. CINAHL; (research adj5 utiliz*).ti,ab; 1554 results.
 23. CINAHL; (research adj5 transfer*).ti,ab; 268 results.
 24. CINAHL; exp NURSING PRACTICE, EVIDENCE-BASED/ OR exp PROFESSIONAL PRACTICE, EVIDENCE-BASED/; 30119 results.
 25. CINAHL; (evidence ADJ based adj2 practice*).ti,ab; 6733 results.
 26. CINAHL; 20 OR 21 OR 22 OR 23 OR 24 OR 25; 49678 results.
 27. CINAHL; 4 AND 19 AND 26; 2239 results.
 28. CINAHL; 27 [Limit to: (Language English)]; 2109 results.
 29. CINAHL; exp MOTIVATION/; 31448 results.
 30. CINAHL; 19 OR 29; 207818 results.
 31. CINAHL; 4 AND 26 AND 30; 2580 results.
 32. CINAHL; 31 [Limit to: (Language English)]; 2439 results.
 33. CINAHL; BANDURA'S SOCIAL COGNITIVE THEORY/; 825 results.
 35. CINAHL; "Social learning theor*".ti,ab; 210 results.
 36. CINAHL; "Social cognitive theor*".ti,ab; 439 results.
 38. CINAHL; "Theory of planned behavior*".ti,ab; 497 results.
 39. CINAHL; "Theory of planned behaviour*".ti,ab; 259 results.
 40. CINAHL; exp PSYCHOLOGICAL THEORY/; 11626 results.
 41. CINAHL; "Psychological theor*".ti,ab; 175 results.
 42. CINAHL; "Theory of reasoned action".ti,ab; 263 results.
 43. CINAHL; "Theory of interpersonal behaviour*".ti,ab; 0 results.
 45. CINAHL; (Social adj5 influence*).ti,ab; 2714 results.
 46. CINAHL; "Theory of interpersonal behavior*".ti,ab; 3 results.
 47. CINAHL; (Self-efficacy adj5 model*).ti,ab; 301 results.
 48. CINAHL; (Health ADJ belief adj5 model*).ti,ab; 796 results.
 49. CINAHL; (Self-determination adj5 theor*).ti,ab; 123 results.
 50. CINAHL; (Expectancy adj5 theor*).ti,ab; 59 results.
 52. CINAHL; "Cognitive theor*".ti,ab; 586 results.
 53. CINAHL; "Locus of control".ti,ab; 1268 results.
 54. CINAHL; 33 OR 35 OR 36 OR 38 OR 39 OR 40 OR 41 OR 42 OR 43 OR 45 OR 46 OR 47 OR 48 OR 49 OR 50 OR 52 OR 53; 17024 results.
 55. CINAHL; 19 AND 26 AND 54; 142 results.
 56. CINAHL; 55 [Limit to: (Language English)]; 138 results.
 58. CINAHL; exp HEALTH PERSONNEL/; 259656 results.
 59. CINAHL; 58 not 4; 122371 results.
 60. CINAHL; 19 AND 26 AND 59; 344 results.
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61. CINAHL; 60 [Limit to: (Language English)]; 341 results.
 62. CINAHL; GUIDELINE ADHERENCE/ [Limit to: (Language English)]; 1984 results.
 63. CINAHL; 26 AND 62 [Limit to: (Language English)]; 240 results.
 64. CINAHL; 63 [Limit to: (Language English) and (Language English)]; 240 results.

MEDLINE

69. MEDLINE; exp *"ATTITUDE OF HEALTH PERSONNEL"/; 49944 results.
70. MEDLINE; exp *SOCIAL BEHAVIOR/; 60817 results.
71. MEDLINE; exp INTENTION/; 4212 results.
75. MEDLINE; exp *MOTIVATION/; 43920 results.
76. MEDLINE; exp *ATTITUDE/; 114516 results.
77. MEDLINE; exp *BEHAVIORAL RESEARCH/; 1201 results.
78. MEDLINE; inten*.ti,ab; 504858 results.
79. MEDLINE; "perceived social norm*".ti,ab; 70 results.
80. MEDLINE; ("social behaviour" OR "social behavior").ti,ab; 4463 results.
81. MEDLINE; "social attitude*".ti,ab; 442 results.
82. MEDLINE; "peer pressure*".ti,ab; 596 results.
83. MEDLINE; (determinant* adj5 behaviour*).ti,ab; 690 results.
84. MEDLINE; (determinant* adj5 behavior*).ti,ab; 1561 results.
85. MEDLINE; 69 OR 70 OR 71 OR 75 OR 76 OR 77 OR 78 OR 79 OR 80 OR 81 OR 82 OR 83 OR 84; 723802 results.
87. MEDLINE; exp *NURSING RESEARCH/ OR exp *RESEARCH/; 157157 results.
88. MEDLINE; exp *EVIDENCE-BASED PRACTICE/; 16679 results.
89. MEDLINE; (research adj5 utilis*).ti,ab; 268 results.
90. MEDLINE; (research adj5 utilis*).ti,ab; 2609 results.
91. MEDLINE; (evidence adj5 utiliz*).ti,ab; 1029 results.
92. MEDLINE; (evidence adj5 utilis*).ti,ab; 125 results.
93. MEDLINE; (engag* adj5 research).ti,ab; 1186 results.
94. MEDLINE; (engag* adj5 evidence).ti,ab; 266 results.
95. MEDLINE; (research adj5 transfer).ti,ab; 650 results.

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96. MEDLINE; (evidence ADJ based ADJ practice*).ti,ab; 4208 results.
97. MEDLINE; 87 OR 88 OR 89 OR 90 OR 91 OR 92 OR 93 OR 94 OR 95 OR 96; 178796 results.
100. MEDLINE; nurs*.ti,ab; 287251 results.
101. MEDLINE; exp *NURSES/ OR exp *NURSING/; 163703 results.
102. MEDLINE; 100 OR 101; 360640 results.
103. MEDLINE; 85 AND 97 AND 102; 2175 results.
104. MEDLINE; 103 [Limit to: Humans and English Language]; 1972 results.

Additional Search Terms

1. MEDLINE; exp *"ATTITUDE OF HEALTH PERSONNEL"/; 52866 results.
2. MEDLINE; exp *SOCIAL BEHAVIOR/; 65623 results.
3. MEDLINE; exp INTENTION/; 4775 results.
4. MEDLINE; exp *MOTIVATION/; 46918 results.
5. MEDLINE; exp *ATTITUDE/; 121448 results.
6. MEDLINE; exp *BEHAVIORAL RESEARCH/; 1257 results.
7. MEDLINE; inten*.ti,ab; 540016 results.
8. MEDLINE; "perceived social norm*".ti,ab; 79 results.
9. MEDLINE; ("social behaviour" OR "social behavior").ti,ab; 4857 results.
10. MEDLINE; "social attitude*".ti,ab; 477 results.
11. MEDLINE; "peer pressure*".ti,ab; 643 results.
12. MEDLINE; (determinant* adj5 behaviour*).ti,ab; 757 results.
13. MEDLINE; (determinant* adj5 behavior*).ti,ab; 1670 results.
14. MEDLINE; 1 OR 2 OR 3 OR 4 OR 5 OR 6 OR 7 OR 8 OR 9 OR 10 OR 11 OR 12 OR 13; 773234 results.
15. MEDLINE; exp *NURSING RESEARCH/ OR exp *RESEARCH/; 210957 results.
16. MEDLINE; exp *EVIDENCE-BASED PRACTICE/; 18671 results.
17. MEDLINE; (research adj5 utilis*).ti,ab; 313 results.
18. MEDLINE; (research adj5 utilis*).ti,ab; 2820 results.
19. MEDLINE; (evidence adj5 utiliz*).ti,ab; 1093 results.

20. MEDLINE; (evidence adj5 utilis*).ti,ab; 142 results.
21. MEDLINE; (engag* adj5 research).ti,ab; 1371 results.
22. MEDLINE; (engag* adj5 evidence).ti,ab; 329 results.
23. MEDLINE; (research adj5 transfer).ti,ab; 704 results.
24. MEDLINE; (evidence ADJ based ADJ practice*).ti,ab; 4850 results.
25. MEDLINE; 15 OR 16 OR 17 OR 18 OR 19 OR 20 OR 21 OR 22 OR 23 OR 24; 234395 results.
26. MEDLINE; nurs*.ti,ab; 300136 results.
27. MEDLINE; exp *NURSES/ OR exp *NURSING/; 170004 results.
28. MEDLINE; 26 OR 27; 375919 results.
29. MEDLINE; 14 AND 25 AND 28; 2621 results.
30. MEDLINE; 29 [Limit to: Humans and English Language]; 2391 results.
31. MEDLINE; exp PSYCHOLOGICAL THEORY/; 68119 results.
32. MEDLINE; "Social cognitive theor*".ti,ab; 685 results.
33. MEDLINE; "Social learning theor*".ti,ab; 417 results.
34. MEDLINE; "Theory of planned behaviour*".ti,ab; 445 results.
35. MEDLINE; "Theory of planned behavior*".ti,ab; 691 results.
36. MEDLINE; "Psychological theor*".ti,ab; 783 results.
37. MEDLINE; "Theory of reasoned action".ti,ab; 318 results.
40. MEDLINE; "Theory of interpersonal behaviour*".ti,ab; 4 results.
41. MEDLINE; "Theory of interpersonal behavior*".ti,ab; 4 results.
42. MEDLINE; (Social adj5 influence*).ti,ab; 7718 results.
43. MEDLINE; (Self-efficacy adj5 model*).ti,ab; 365 results.
44. MEDLINE; (Health ADJ belief adj5 model*).ti,ab; 1087 results.
45. MEDLINE; (Self-determination adj5 theor*).ti,ab; 287 results.
46. MEDLINE; (Expectancy adj5 theor*).ti,ab; 239 results.
47. MEDLINE; "Cognitive theor*".ti,ab; 1387 results.
49. MEDLINE; "Locus of control".ti,ab; 4600 results.
50. MEDLINE; 31 OR 32 OR 33 OR 34 OR 35 OR 36 OR 37 OR 40 OR 41 OR 42 OR 43 OR 44 OR 45 OR 46 OR 47 OR 49; 84338 results.
51. MEDLINE; 25 AND 50; 1118 results.
52. MEDLINE; 51 [Limit to: Humans and English Language]; 958 results.
53. MEDLINE; 14 AND 25 AND 50; 254 results.
54. MEDLINE; 53 [Limit to: Humans and English Language]; 227 results.
55. MEDLINE; exp HEALTH PERSONNEL/; 331746 results.
56. MEDLINE; 55 not 28; 228442 results.
57. MEDLINE; 14 AND 25 AND 56; 690 results.
58. MEDLINE; 57 [Limit to: Humans and English Language]; 600 results.

PsycINFO

105. PsycINFO; exp NURSES/; 16408 results.
106. PsycINFO; exp NURSING/; 9734 results.
107. PsycINFO; nurs*.ti,ab; 52279 results.
108. PsycINFO; 105 OR 106 OR 107; 53228 results.
109. PsycINFO; exp INTENTION/; 7196 results.
110. PsycINFO; exp ATTITUDES/ OR exp HEALTH PERSONNEL ATTITUDES/; 220483 results.
111. PsycINFO; exp MOTIVATION/; 48759 results.
112. PsycINFO; exp SOCIAL NORMS/; 4143 results.
113. PsycINFO; "perceived social norm*".ti,ab; 104 results.
114. PsycINFO; exp SOCIAL BEHAVIOR/; 424501 results.
115. PsycINFO; "social attitude*".ti,ab; 1680 results.
116. PsycINFO; ("social behaviour*" OR "social behavior").ti,ab; 10376 results.
117. PsycINFO; exp PEER PRESSURE/; 456 results.
118. PsycINFO; (determinant* adj5 behaviour*).ti,ab; 364 results.
119. PsycINFO; (determinant* adj5 behavior*).ti,ab; 2502 results.
120. PsycINFO; (inten*).ti,ab; 142212 results.

121. PsycINFO; 109 OR 110 OR 111 OR 112 OR 113 OR 114 OR 115 OR 116 OR 117 OR 118 OR 119 OR 120; 742516 results.
122. PsycINFO; 108 AND 121; 18080 results.
123. PsycINFO; exp EVIDENCE BASED PRACTICE/; 6367 results.
124. PsycINFO; (evidence ADJ based adj5 practice*).ti,ab; 3996 results.
128. PsycINFO; (research adj5 utilis*).ti,ab; 121 results.
130. PsycINFO; (research adj5 utiliz*).ti,ab; 3109 results.
131. PsycINFO; (evidence adj5 utilis*).ti,ab; 349 results.
132. PsycINFO; (evidence adj5 utilis).ti,ab; 0 results.
133. PsycINFO; (engag* adj5 research).ti,ab; 1758 results.
134. PsycINFO; (engag* adj5 evidence).ti,ab; 318 results.
135. PsycINFO; (research adj5 transfer).ti,ab; 429 results.
136. PsycINFO; exp EXPERIMENTATION/; 48341 results.
137. PsycINFO; 123 OR 124 OR 128 OR 130 OR 131 OR 132 OR 133 OR 134 OR 135 OR 136; 60373 results.
138. PsycINFO; 122 AND 137; 448 results.
139. PsycINFO; 138 [Limit to: English Language]; 446 results.

Additional Search Terms

1. PsycINFO; exp NURSES/; 17957 results.
2. PsycINFO; exp NURSING/; 10930 results.
3. PsycINFO; nurs*.ti,ab; 56669 results.
4. PsycINFO; 1 OR 2 OR 3; 57667 results.
5. PsycINFO; exp INTENTION/; 7923 results.
6. PsycINFO; exp ATTITUDES/ OR exp HEALTH PERSONNEL ATTITUDES/; 232329 results.
7. PsycINFO; exp MOTIVATION/; 51256 results.
8. PsycINFO; exp SOCIAL NORMS/; 4471 results.
9. PsycINFO; "perceived social norm*".ti,ab; 113 results.
10. PsycINFO; exp SOCIAL BEHAVIOR/; 448338 results.
11. PsycINFO; "social attitude*".ti,ab; 1742 results.
12. PsycINFO; ("social behaviour*" OR "social behavior").ti,ab; 10944 results.
13. PsycINFO; exp PEER PRESSURE/; 481 results.
14. PsycINFO; (determinant* adj5 behaviour*).ti,ab; 399 results.
15. PsycINFO; (determinant* adj5 behavior*).ti,ab; 2617 results.
16. PsycINFO; (inten*).ti,ab; 153547 results.
17. PsycINFO; 5 OR 6 OR 7 OR 8 OR 9 OR 10 OR 11 OR 12 OR 13 OR 14 OR 15 OR 16; 786276 results.
18. PsycINFO; 4 AND 17; 19579 results.
19. PsycINFO; exp EVIDENCE BASED PRACTICE/; 7453 results.
20. PsycINFO; (evidence ADJ based adj5 practice*).ti,ab; 4722 results.
21. PsycINFO; (research adj5 utilis*).ti,ab; 144 results.
22. PsycINFO; (research adj5 utiliz*).ti,ab; 3429 results.
23. PsycINFO; (evidence adj5 utilis*).ti,ab; 392 results.
24. PsycINFO; (evidence adj5 utilis).ti,ab; 0 results.
25. PsycINFO; (engag* adj5 research).ti,ab; 2042 results.
26. PsycINFO; (engag* adj5 evidence).ti,ab; 371 results.
27. PsycINFO; (research adj5 transfer).ti,ab; 478 results.
28. PsycINFO; exp EXPERIMENTATION/; 51593 results.
29. PsycINFO; 19 OR 20 OR 21 OR 22 OR 23 OR 24 OR 25 OR 26 OR 27 OR 28; 65478 results.
30. PsycINFO; 18 AND 29; 514 results.
31. PsycINFO; 30 [Limit to: English Language]; 511 results.
49. PsycINFO; exp SOCIAL COGNITION/ AND exp THEORIES/; 743 results.
50. PsycINFO; "Social cognitive theor*".ti,ab; 1464 results.
51. PsycINFO; exp SOCIAL LEARNING/ AND exp LEARNING THEORY/; 182 results.
52. PsycINFO; "Social learning theor*".ti,ab; 1804 results.
53. PsycINFO; exp PLANNED BEHAVIOR/ AND exp THEORIES/; 319 results.
54. PsycINFO; "Theory of planned behaviour*".ti,ab; 520 results.
55. PsycINFO; "Theory of planned behavior*".ti,ab; 1531 results.

56. PsycINFO; exp PSYCHOLOGICAL THEORIES/; 17158 results.
57. PsycINFO; "Psychological theor*".ti,ab; 5996 results.
58. PsycINFO; exp REASONED ACTION/; 523 results.
59. PsycINFO; exp THEORIES/; 87799 results.
60. PsycINFO; 58 AND 59; 136 results.
61. PsycINFO; "Theory of reasoned action".ti,ab; 879 results.
62. PsycINFO; "Theory of interpersonal behaviour*".ti,ab; 2 results.
63. PsycINFO; "Theory of interpersonal behavior*".ti,ab; 25 results.
64. PsycINFO; (Social adj5 influence*).ti,ab; 16472 results.
65. PsycINFO; (Self-efficacy adj5 model*).ti,ab; 804 results.
66. PsycINFO; (Health ADJ belief adj5 model*).ti,ab; 1069 results.
67. PsycINFO; (Self-determination adj5 theor*).ti,ab; 1116 results.
68. PsycINFO; (Expectancy adj5 theor*).ti,ab; 1189 results.
69. PsycINFO; exp COGNITIVE PSYCHOLOGY/ AND exp THEORIES/; 896 results.
70. PsycINFO; "Cognitive theor*".ti,ab; 4282 results.
71. PsycINFO; exp "INTERNAL EXTERNAL LOCUS OF CONTROL"/; 12148 results.
72. PsycINFO; "Locus of control".ti,ab; 12205 results.
73. PsycINFO; 49 OR 50 OR 51 OR 52 OR 53 OR 54 OR 55 OR 56 OR 57 OR 60 OR 61 OR 62 OR 63 OR 64 OR 65 OR 66 OR 67 OR 68 OR 69 OR 70 OR 71 OR 72; 66572 results.
74. PsycINFO; 17 AND 29 AND 73; 442 results.
75. PsycINFO; 74 [Limit to: Human and English Language]; 394 results.
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77. PsycINFO; exp HEALTH PERSONNEL/; 86098 results.
78. PsycINFO; 77 not 4; 64919 results.
79. PsycINFO; 17 AND 29 AND 78; 443 results.
80. PsycINFO; 79 [Limit to: English Language]; 430 results.
81. PsycINFO; (guideline* adj3 adhere*).ti,ab; 404 results.
82. PsycINFO; (guideline* adj3 compliance*).ti,ab; 137 results.
83. PsycINFO; 81 OR 82; 530 results.
84. PsycINFO; 17 AND 29 AND 83; 12 results.

BNI

140. BNI; exp EVIDENCE BASED PRACTICE/; 1993 results.
142. BNI; (evidence ADJ based adj5 practice*).ti,ab; 870 results.
143. BNI; exp RESEARCH METHODS/; 4497 results.
144. BNI; (research adj5 utilis*).ti,ab; 103 results.
145. BNI; (research adj5 utiliz*).ti,ab; 167 results.
146. BNI; (evidence adj5 utilis*).ti,ab; 8 results.
147. BNI; (evidence adj5 utilis*).ti,ab; 18 results.
148. BNI; (research adj5 transfer).ti,ab; 25 results.
149. BNI; (engag* adj5 research).ti,ab; 37 results.
150. BNI; (engag* adj5 evidence).ti,ab; 8 results.
151. BNI; 140 OR 142 OR 143 OR 144 OR 145 OR 146 OR 147 OR 148 OR 149 OR 150; 6675 results.
152. BNI; inten*.ti,ab; 3983 results.
153. BNI; motivat*.ti,ab; 961 results.
154. BNI; exp STAFF : ATTITUDES/; 3193 results.
155. BNI; attitude*.ti,ab; 5551 results.
156. BNI; ("social behaviour" OR "social behavior").ti,ab; 28 results.
157. BNI; "peer pressure*".ti,ab; 14 results.
158. BNI; "perceived social norm*".ti,ab; 1 results.
159. BNI; (determinant* adj5 behaviour*).ti,ab; 21 results.
160. BNI; (determinant* adj5 behavior*).ti,ab; 12 results.
161. BNI; 152 OR 153 OR 154 OR 155 OR 156 OR 157 OR 158 OR 159 OR 160; 12199 results.

162. BNI; 151 AND 161; 305 results.
163. BNI; exp STUDENT NURSES/ OR exp STAFF NURSES/; 2396 results.
164. BNI; exp NURSING/; 59869 results.
165. BNI; nurs*.ti,ab; 80743 results.
166. BNI; 162 AND 165; 180 results.

Additional Search Terms

1. BNI; exp EVIDENCE BASED PRACTICE/; 2123 results.
2. BNI; (evidence ADJ based adj5 practice*).ti,ab; 965 results.
3. BNI; exp RESEARCH METHODS/; 4766 results.
4. BNI; (research adj5 utilis*).ti,ab; 113 results.
5. BNI; (research adj5 utiliz*).ti,ab; 169 results.
6. BNI; (evidence adj5 utilis*).ti,ab; 8 results.
7. BNI; (evidence adj5 utilis*).ti,ab; 20 results.
8. BNI; (research adj5 transfer).ti,ab; 30 results.
9. BNI; (engag* adj5 research).ti,ab; 46 results.
10. BNI; (engag* adj5 evidence).ti,ab; 11 results.
11. BNI; 1 OR 2 OR 3 OR 4 OR 5 OR 6 OR 7 OR 8 OR 9 OR 10; 7111 results.
12. BNI; inten*.ti,ab; 4223 results.
13. BNI; motivat*.ti,ab; 1078 results.
14. BNI; exp STAFF : ATTITUDES/; 3599 results.
15. BNI; attitude*.ti,ab; 5969 results.
16. BNI; ("social behaviour" OR "social behavior").ti,ab; 31 results.
17. BNI; "peer pressure*".ti,ab; 15 results.
18. BNI; "perceived social norm*".ti,ab; 1 results.
19. BNI; (determinant* adj5 behaviour*).ti,ab; 21 results.
20. BNI; (determinant* adj5 behavior*).ti,ab; 12 results.
21. BNI; 12 OR 13 OR 14 OR 15 OR 16 OR 17 OR 18 OR 19 OR 20; 13219 results.
22. BNI; 11 AND 21; 341 results.
23. BNI; exp STUDENT NURSES/ OR exp STAFF NURSES/; 2631 results.
24. BNI; exp NURSING/; 63082 results.
25. BNI; nurs*.ti,ab; 84592 results.
26. BNI; 22 AND 25; 204 results.
27. BNI; exp MEDICAL PROFESSION/; 4421 results.
28. BNI; exp PARAMEDICAL PROFESSIONS/; 1972 results.
29. BNI; exp PHARMACISTS/ OR exp PHYSIOTHERAPY/; 1034 results.
30. BNI; exp OCCUPATIONAL THERAPY/; 300 results.
31. BNI; exp DENTISTRY/ OR exp HEALTH VISITING/; 2073 results.
32. BNI; "allied health profession*".ti,ab; 111 results.
33. BNI; 27 OR 28 OR 29 OR 30 OR 31 OR 32; 8501 results.
34. BNI; 33 not 26; 8498 results.
35. BNI; 11 AND 21 AND 34; 2 results.
36. BNI; exp "MODELS AND THEORIES"/; 5398 results.
37. BNI; "PSYCHOLOGICAL THEOR*".ti,ab; 14 results.
38. BNI; "Social cognitive theor*".ti,ab; 21 results.
39. BNI; "Social learning theor*".ti,ab; 18 results.
40. BNI; "Theory of planned behaviour*".ti,ab; 56 results.
41. BNI; "Theory of planned behavior*".ti,ab; 26 results.
42. BNI; "Psychological theor*".ti,ab; 14 results.
43. BNI; "Theory of reasoned action".ti,ab; 26 results.
44. BNI; "Theory of interpersonal behaviour*".ti,ab; 0 results.
45. BNI; "Theory of interpersonal behavior*".ti,ab; 0 results.
46. BNI; (Social adj5 influence*).ti,ab; 179 results.
47. BNI; (Self-efficacy adj5 model*).ti,ab; 14 results.

48. BNI; (Health ADJ belief adj5 model*).ti,ab; 111 results.
 49. BNI; (Self-determination adj5 theor*).ti,ab; 8 results.
 50. BNI; (Expectancy adj5 theor*).ti,ab; 3 results.
 51. BNI; "Cognitive theor*".ti,ab; 27 results.
 52. BNI; "Locus of control".ti,ab; 120 results.
 53. BNI; 37 OR 38 OR 39 OR 40 OR 41 OR 42 OR 43 OR 44 OR 45 OR 46 OR 47 OR 48 OR 49 OR 50 OR 51 OR
OR
52; 571 results.
 54. BNI; 11 AND 21 AND 53; 3 results.
 55. BNI; (guideline* adj3 adhere*).ti,ab; 55 results.
 56. BNI; (guideline* adj3 compliance*).ti,ab; 50 results.
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57. BNI; 55 OR 56; 103 results.
 58. BNI; 11 AND 57; 8 results.

Plus HCPs

1. BNI; exp EVIDENCE BASED PRACTICE/; 2123 results.
2. BNI; (evidence ADJ based adj5 practice*).ti,ab; 965 results.
3. BNI; exp RESEARCH METHODS/; 4766 results.
4. BNI; (research adj5 utilis*).ti,ab; 113 results.
5. BNI; (research adj5 utilis*).ti,ab; 169 results.
6. BNI; (evidence adj5 utilis*).ti,ab; 8 results.
7. BNI; (evidence adj5 utilis*).ti,ab; 20 results.
8. BNI; (research adj5 transfer).ti,ab; 30 results.
9. BNI; (engag* adj5 research).ti,ab; 46 results.
10. BNI; (engag* adj5 evidence).ti,ab; 11 results.
11. BNI; 1 OR 2 OR 3 OR 4 OR 5 OR 6 OR 7 OR 8 OR 9 OR 10; 7111 results.
12. BNI; inten*.ti,ab; 4223 results.
13. BNI; motivat*.ti,ab; 1078 results.
14. BNI; exp STAFF : ATTITUDES/; 3599 results.
15. BNI; attitude*.ti,ab; 5969 results.
16. BNI; ("social behaviour" OR "social behavior").ti,ab; 31 results.
17. BNI; "peer pressure*".ti,ab; 15 results.
18. BNI; "perceived social norm*".ti,ab; 1 results.
19. BNI; (determinant* adj5 behaviour*).ti,ab; 21 results.
20. BNI; (determinant* adj5 behavior*).ti,ab; 12 results.
21. BNI; 12 OR 13 OR 14 OR 15 OR 16 OR 17 OR 18 OR 19 OR 20; 13219 results.
22. BNI; 11 AND 21; 341 results.
23. BNI; exp STUDENT NURSES/ OR exp STAFF NURSES/; 2631 results.
24. BNI; exp NURSING/; 63082 results.
25. BNI; nurs*.ti,ab; 84592 results.
26. BNI; 22 AND 25; 204 results.
27. BNI; exp MEDICAL PROFESSION/; 4421 results.
28. BNI; exp PARAMEDICAL PROFESSIONS/; 1972 results.
29. BNI; exp PHARMACISTS/ OR exp PHYSIOTHERAPY/; 1034 results.
30. BNI; exp OCCUPATIONAL THERAPY/; 300 results.
31. BNI; exp DENTISTRY/ OR exp HEALTH VISITING/; 2073 results.
32. BNI; "allied health profession*".ti,ab; 111 results.
33. BNI; 27 OR 28 OR 29 OR 30 OR 31 OR 32; 8501 results.
34. BNI; 33 not 26; 8498 results.
35. BNI; 11 AND 21 AND 34; 2 results.

Plus Guidelines

1. BNI; exp EVIDENCE BASED PRACTICE/; 2123 results.

2. BNI; (evidence ADJ based adj5 practice*).ti,ab; 965 results.
3. BNI; exp RESEARCH METHODS/; 4766 results.
4. BNI; (research adj5 utilis*).ti,ab; 113 results.
5. BNI; (research adj5 utiliz*).ti,ab; 169 results.
6. BNI; (evidence adj5 utilis*).ti,ab; 8 results.
7. BNI; (evidence adj5 utilis*).ti,ab; 20 results.
8. BNI; (research adj5 transfer).ti,ab; 30 results.
9. BNI; (engag* adj5 research).ti,ab; 46 results.
10. BNI; (engag* adj5 evidence).ti,ab; 11 results.
11. BNI; 1 OR 2 OR 3 OR 4 OR 5 OR 6 OR 7 OR 8 OR 9 OR 10; 7111 results.
12. BNI; inten*.ti,ab; 4223 results.
13. BNI; motivat*.ti,ab; 1078 results.
14. BNI; exp STAFF : ATTITUDES/; 3599 results.
15. BNI; attitude*.ti,ab; 5969 results.
16. BNI; ("social behaviour" OR "social behavior").ti,ab; 31 results.
17. BNI; "peer pressure*".ti,ab; 15 results.
18. BNI; "perceived social norm*".ti,ab; 1 results.
19. BNI; (determinant* adj5 behaviour*).ti,ab; 21 results.
20. BNI; (determinant* adj5 behavior*).ti,ab; 12 results.
21. BNI; 12 OR 13 OR 14 OR 15 OR 16 OR 17 OR 18 OR 19 OR 20; 13219 results.
22. BNI; 11 AND 21; 341 results.
23. BNI; exp STUDENT NURSES/ OR exp STAFF NURSES/; 2631 results.
24. BNI; exp NURSING/; 63082 results.
25. BNI; nurs*.ti,ab; 84592 results.
26. BNI; 22 AND 25; 204 results.
27. BNI; exp MEDICAL PROFESSION/; 4421 results.
28. BNI; exp PARAMEDICAL PROFESSIONS/; 1972 results.
29. BNI; exp PHARMACISTS/ OR exp PHYSIOTHERAPY/; 1034 results.
30. BNI; exp OCCUPATIONAL THERAPY/; 300 results.
31. BNI; exp DENTISTRY/ OR exp HEALTH VISITING/; 2073 results.
32. BNI; "allied health profession*".ti,ab; 111 results.
33. BNI; 27 OR 28 OR 29 OR 30 OR 31 OR 32; 8501 results.
34. BNI; 33 not 26; 8498 results.
35. BNI; 11 AND 21 AND 34; 2 results.
36. BNI; exp "MODELS AND THEORIES"/; 5398 results.
37. BNI; "PSYCHOLOGICAL THEOR*".ti,ab; 14 results.
38. BNI; "Social cognitive theor*".ti,ab; 21 results.
39. BNI; "Social learning theor*".ti,ab; 18 results.
40. BNI; "Theory of planned behaviour*".ti,ab; 56 results.
41. BNI; "Theory of planned behavior*".ti,ab; 26 results.
42. BNI; "Psychological theor*".ti,ab; 14 results.
43. BNI; "Theory of reasoned action".ti,ab; 26 results.
44. BNI; "Theory of interpersonal behaviour*".ti,ab; 0 results.
45. BNI; "Theory of interpersonal behavior*".ti,ab; 0 results.
46. BNI; (Social adj5 influence*).ti,ab; 179 results.
47. BNI; (Self-efficacy adj5 model*).ti,ab; 14 results.
48. BNI; (Health ADJ belief adj5 model*).ti,ab; 111 results.
49. BNI; (Self-determination adj5 theor*).ti,ab; 8 results.
50. BNI; (Expectancy adj5 theor*).ti,ab; 3 results.
51. BNI; "Cognitive theor*".ti,ab; 27 results.
52. BNI; "Locus of control".ti,ab; 120 results.
53. BNI; 37 OR 38 OR 39 OR 40 OR 41 OR 42 OR 43 OR 44 OR 45 OR 46 OR 47 OR 48 OR 49 OR 50 OR 51 OR 52; 571 results.
54. BNI; 11 AND 21 AND 53; 3 results.
55. BNI; (guideline* adj3 adhere*).ti,ab; 55 results.
56. BNI; (guideline* adj3 compliance*).ti,ab; 50 results.

57. BNI; 55 OR 56; 103 results.

58. BNI; 11 AND 57; 8 results.

Plus Theories

1. BNI; exp EVIDENCE BASED PRACTICE/; 2123 results.
2. BNI; (evidence ADJ based adj5 practice*).ti,ab; 965 results.
3. BNI; exp RESEARCH METHODS/; 4766 results.
4. BNI; (research adj5 utilis*).ti,ab; 113 results.
5. BNI; (research adj5 utiliz*).ti,ab; 169 results.
6. BNI; (evidence adj5 utilis*).ti,ab; 8 results.
7. BNI; (evidence adj5 utilis*).ti,ab; 20 results.
8. BNI; (research adj5 transfer).ti,ab; 30 results.
9. BNI; (engag* adj5 research).ti,ab; 46 results.
10. BNI; (engag* adj5 evidence).ti,ab; 11 results.
11. BNI; 1 OR 2 OR 3 OR 4 OR 5 OR 6 OR 7 OR 8 OR 9 OR 10; 7111 results.
12. BNI; inten*.ti,ab; 4223 results.
13. BNI; motivat*.ti,ab; 1078 results.
14. BNI; exp STAFF : ATTITUDES/; 3599 results.
15. BNI; attitude*.ti,ab; 5969 results.
16. BNI; ("social behaviour" OR "social behavior").ti,ab; 31 results.
17. BNI; "peer pressure*".ti,ab; 15 results.
18. BNI; "perceived social norm*".ti,ab; 1 results.
19. BNI; (determinant* adj5 behaviour*).ti,ab; 21 results.
20. BNI; (determinant* adj5 behavior*).ti,ab; 12 results.
21. BNI; 12 OR 13 OR 14 OR 15 OR 16 OR 17 OR 18 OR 19 OR 20; 13219 results.
22. BNI; 11 AND 21; 341 results.
23. BNI; exp STUDENT NURSES/ OR exp STAFF NURSES/; 2631 results.
24. BNI; exp NURSING/; 63082 results.
25. BNI; nurs*.ti,ab; 84592 results.
26. BNI; 22 AND 25; 204 results.
27. BNI; exp MEDICAL PROFESSION/; 4421 results.
28. BNI; exp PARAMEDICAL PROFESSIONS/; 1972 results.
29. BNI; exp PHARMACISTS/ OR exp PHYSIOTHERAPY/; 1034 results.
30. BNI; exp OCCUPATIONAL THERAPY/; 300 results.
31. BNI; exp DENTISTRY/ OR exp HEALTH VISITING/; 2073 results.
32. BNI; "allied health profession*".ti,ab; 111 results.
33. BNI; 27 OR 28 OR 29 OR 30 OR 31 OR 32; 8501 results.
34. BNI; 33 not 26; 8498 results.
35. BNI; 11 AND 21 AND 34; 2 results.
36. BNI; exp "MODELS AND THEORIES"/; 5398 results.
37. BNI; "PSYCHOLOGICAL THEOR*".ti,ab; 14 results.
38. BNI; "Social cognitive theor*".ti,ab; 21 results.
39. BNI; "Social learning theor*".ti,ab; 18 results.
40. BNI; "Theory of planned behaviour*".ti,ab; 56 results.
41. BNI; "Theory of planned behavior*".ti,ab; 26 results.
42. BNI; "Psychological theor*".ti,ab; 14 results.
43. BNI; "Theory of reasoned action".ti,ab; 26 results.
44. BNI; "Theory of interpersonal behaviour*".ti,ab; 0 results.
45. BNI; "Theory of interpersonal behavior*".ti,ab; 0 results.
46. BNI; (Social adj5 influence*).ti,ab; 179 results.
47. BNI; (Self-efficacy adj5 model*).ti,ab; 14 results.
48. BNI; (Health ADJ belief adj5 model*).ti,ab; 111 results.
49. BNI; (Self-determination adj5 theor*).ti,ab; 8 results.

50. BNI; (Expectancy adj5 theor*).ti,ab; 3 results.
51. BNI; "Cognitive theor*".ti,ab; 27 results.
52. BNI; "Locus of control".ti,ab; 120 results.
53. BNI; 37 OR 38 OR 39 OR 40 OR 41 OR 42 OR 43 OR 44 OR 45 OR 46 OR 47 OR 48 OR 49 OR 50 OR 51 OR
OR
- 52; 571 results.
54. BNI; 11 AND 21 AND 53; 3 results.

HMIC

167. HMIC; exp EVIDENCE BASED PRACTICE/; 792 results.
168. HMIC; (evidence ADJ based adj5 practice*).ti,ab; 1141 results.
169. HMIC; exp RESEARCH/; 6489 results.
170. HMIC; (research adj5 utilis*).ti,ab; 233 results.
171. HMIC; (research adj5 utiliz*).ti,ab; 59 results.
172. HMIC; (evidence adj5 utilis*).ti,ab; 20 results.
173. HMIC; (evidence adj5 utilis*).ti,ab; 79 results.
174. HMIC; (research adj5 transfer).ti,ab; 46 results.
175. HMIC; (engag* adj5 research).ti,ab; 131 results.
176. HMIC; (engag* adj5 evidence).ti,ab; 54 results.
177. HMIC; 167 OR 168 OR 169 OR 170 OR 171 OR 172 OR 173 OR 174 OR 175 OR 176; 8325 results.
178. HMIC; exp NURSES/; 11290 results.
179. HMIC; exp NURSING/; 9141 results.
180. HMIC; nurs*.ti,ab; 30133 results.
181. HMIC; 178 OR 179 OR 180; 35700 results.
182. HMIC; 177 AND 181; 2120 results.
183. HMIC; inten*.ti,ab; 7788 results.
184. HMIC; exp MOTIVATION/; 503 results.
185. HMIC; exp ATTITUDES/ OR exp STAFF ATTITUDES/; 8078 results.
186. HMIC; "social attitude*".ti,ab; 115 results.
187. HMIC; exp SOCIAL BEHAVIOUR/; 99 results.
188. HMIC; ("social behaviour" OR "social behavior").ti,ab; 93 results.
189. HMIC; "peer pressure*".ti,ab; 45 results.
190. HMIC; "perceived social norm*".ti,ab; 3 results.
191. HMIC; (determinant* adj5 behaviour*).ti,ab; 71 results.
192. HMIC; (determinant* adj5 behavior*).ti,ab; 1 results.
193. HMIC; 183 OR 184 OR 185 OR 186 OR 187 OR 188 OR 189 OR 190 OR 191 OR 192; 16327 results.
194. HMIC; 182 AND 193; 284 results.
195. BNI, HMIC; Duplicate filtered: [162 AND 165], [182 AND 193]; 464 results

Additional Searches: Guidelines, HCPs, Theories

1. HMIC; exp EVIDENCE BASED PRACTICE/; 1995 results.
2. HMIC; (evidence ADJ based adj5 practice*).ti,ab; 1202 results.
3. HMIC; exp RESEARCH/; 8408 results.
4. HMIC; (research adj5 utilis*).ti,ab; 195 results.
5. HMIC; (research adj5 utiliz*).ti,ab; 64 results.
6. HMIC; (evidence adj5 utilis*).ti,ab; 15 results.
7. HMIC; (evidence adj5 utilis*).ti,ab; 68 results.
8. HMIC; (research adj5 transfer).ti,ab; 30 results.
9. HMIC; (engag* adj5 research).ti,ab; 125 results.
10. HMIC; (engag* adj5 evidence).ti,ab; 38 results.
11. HMIC; 1 OR 2 OR 3 OR 4 OR 5 OR 6 OR 7 OR 8 OR 9 OR 10; 10958 results.
12. HMIC; exp NURSES/; 18137 results.
13. HMIC; exp NURSING/; 13701 results.
14. HMIC; nurs*.ti,ab; 34798 results.
15. HMIC; 12 OR 13 OR 14; 42629 results.

16. HMIC; 11 AND 15; 2739 results.
17. HMIC; inten*.ti,ab; 9668 results.
18. HMIC; exp MOTIVATION/; 870 results.
19. HMIC; exp ATTITUDES/ OR exp STAFF ATTITUDES/; 16251 results.
20. HMIC; "social attitude*".ti,ab; 117 results.
21. HMIC; exp SOCIAL BEHAVIOUR/; 152 results.
22. HMIC; ("social behaviour" OR "social behavior").ti,ab; 110 results.
23. HMIC; "peer pressure*".ti,ab; 50 results.
24. HMIC; "perceived social norm*".ti,ab; 6 results.
25. HMIC; (determinant* adj5 behaviour*).ti,ab; 83 results.
26. HMIC; (determinant* adj5 behavior*).ti,ab; 0 results.
27. HMIC; 17 OR 18 OR 19 OR 20 OR 21 OR 22 OR 23 OR 24 OR 25 OR 26; 26458 results.
28. HMIC; 16 AND 27; 364 results.
29. HMIC; exp PSYCHOLOGICAL THEORY/; 23 results.
30. HMIC; "Social cognitive theor*".ti,ab; 14 results.
31. HMIC; "Social learning theor*".ti,ab; 12 results.
32. HMIC; "Theory of planned behaviour*".ti,ab; 64 results.
33. HMIC; "Theory of planned behavior*".ti,ab; 2 results.
34. HMIC; "Psychological theor*".ti,ab; 52 results.
35. HMIC; "Theory of reasoned action".ti,ab; 12 results.
36. HMIC; "Theory of interpersonal behaviour*".ti,ab; 0 results.
37. HMIC; "Theory of interpersonal behavior*".ti,ab; 0 results.
38. HMIC; (Social adj5 influence*).ti,ab; 521 results.
39. HMIC; (Self-efficacy adj5 model*).ti,ab; 16 results.
40. HMIC; (Health ADJ belief adj5 model*).ti,ab; 49 results.
41. HMIC; (Self-determination adj5 theor*).ti,ab; 5 results.
42. HMIC; (Expectancy adj5 theor*).ti,ab; 4 results.
43. HMIC; "Cognitive theor*".ti,ab; 20 results.
44. HMIC; "Locus of control".ti,ab; 104 results.
45. HMIC; 29 OR 30 OR 31 OR 32 OR 33 OR 34 OR 35 OR 36 OR 37 OR 38 OR 39 OR 40 OR 41 OR 42 OR 43 OR 44; 831 results.
46. HMIC; 11 AND 27 AND 45; 4 results.
47. HMIC; exp HEALTH SERVICE STAFF/; 46910 results.
48. HMIC; 47 not 15; 27236 results.
49. HMIC; 11 AND 27 AND 48; 90 results.
50. HMIC; (guideline* adj3 adhere*).ti,ab; 116 results.
51. HMIC; (guideline* adj3 compliance*).ti,ab; 90 results.
52. HMIC; 50 OR 51; 203 results.
53. HMIC; 11 AND 27 AND 52; 3 results.

Author and Title	Design, Theoretical Model and Main Aim	Characteristics of responders and setting	Measures of behaviour	Predictive measures of behaviour (Intention, plus other factors)	Predictive measures of Intention	Results	Main Outcomes	Quality
1. Godin et al (1998) Canada Understanding physicians intention to use a simple infection control measure	Questionnaire Survey TPB	GPs Medical specialists Surgeons.	<u>Measures of Behaviour</u> To use gloves whilst exposed to blood products or body fluids	<u>Predictive Measures of Behaviour Intention</u> 'Do you intend to wear gloves when contact with blood or biological fluids is possible' - Recorded as a percentage score	<u>Predictive Measures of Intention</u> TPB variables: -PBC Attitude -Subjective Norm -Perception of risk -Gender -Past Behaviour	<u>REPORTED BEHAVIOUR</u> -Behaviour reported as intentional behaviour -Intention to wear gloves when contact with blood or body fluids was strong 80% <u>REPORTED PREDICTORS (Determinants) OF BEHAVIOUR</u> - Intention to wear gloves was strong <u>REPORTED PREDICTORS (Determinants) OF INTENTION</u> 1. S Norm*p<.0001 2.Attitude 3.PBC Additional Variables -Age; younger respondents had greater odds than older respondents	SUBJECTIVE NORM main predictor of intention	Recruitment Random Sample Measurement Response Rate 40% (n=720)

<p>2. Levin (1999) USA Test of the Fishbein and Ajzen models as predictors of health care workers glove use</p>	<p>Questionnaire Survey TRA, TPB To establish predictors of glove use when there is potential exposure to blood</p>	<p>Nurses and laboratory workers</p>	<p><u>Measures of Behaviour</u> Glove use -Correlation matrix for TRA and TPB variables</p>	<p><u>Predictive Measures of Behaviour</u> Intention measured not actual behaviour</p>	<p><u>Predictive Measures of Intention</u> TPB variables: -PBC -Intention -Attitude -Subjective Norm Plus: Perceived risk' associated with glove us</p>	<p><u>REPORTED BEHAVIOUR</u> -Behaviour reported as intentional behaviour -Only 30% of Health Care Workers thought that wearing gloves was completely under their control <u>REPORTED PREDICTORS (Determinants) OF BEHAVIOUR</u> -Not reported <u>REPORTED PREDICTORS (Determinants) OF INTENTION</u> Perceived control was the variable that contributed the most to the understandings of intentions toward glove use Intention to wear gloves not influenced by important others (subjective norm)</p>	<p><u>Main Outcome</u> ROLE OF PBC ROLE OF ATTITUDE (also important) Professional Subjective Norm Differences not significant ROLE OF ADDITIONAL VARIABLES (perceived risk: only measured in model)</p>	<p>Recruitment -Random sample of nurses and laboratory workers Measurement -Elicitation Studies? -Reliability? Psychometric quality and Response Rate - RR included 107 questionnaires were unusable who had no contact with blood during their working day</p>
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<p>3. Godin et al (2000) Canada Determinants of nurses adherence to universal precautions for venipunctures</p>	<p>Self-report Survey -Theory of Planned Behaviour -Triandis's Theory of Interpersonal Behaviour -Aim to explain and predict adherence to Universal Precautions to performing venipunctures</p>	<p>156 Registered Nurses working at a regional hospital -92% women</p>	<p><u>Measures of Behaviour</u> -Adherence to Clinical Guidelines -Use of gloves -Hand washing -Proper handling of the needle -Use of puncture resistant containers for disposal and transportation of needles Three month follow-up examined behaviour only: -Nurses asked to estimate how many times they had adhered to UPs out of the last 10 VPs performed <u>Analysis</u></p>	<p><u>Predictive Measures of Behaviour</u> -Intention -PBC Plus: -Perceived Barriers -Habit -Habit and Past Behaviour measured by asking respondents to estimate on a 5 point scale the proportion of time precautions</p>	<p><u>Predictive Measures of Intention</u> -Attitude -Subjective Norm -PBC -Perceived normative belief -Role belief Assessed by means of several statements</p>	<p><u>REPORTED BEHAVIOUR</u> Rate of adherence to recommendations for 1248 hand hygiene recommendations was 70% <u>REPORTED PREDICTORS (Determinants) OF BEHAVIOUR</u> -Overall intention explained 0.68 of variance for measured behaviours Strongest predictor of behaviour is intention (0.50) -Perceived Barriers (0.44) -PBC (0.43) <u>REPORTED PREDICTORS (Determinants) OF INTENTION</u> -Perceived barriers and personal normative beliefs highest correlation coefficients <u>with</u> intention (0.78 and 0.63) -Personal normative belief (0.63) also significant -All other variables (socio demographic) did not explain additional portions of variance of intention</p>	<p><u>Main Outcome</u> ROLE OF ADDITIONAL VARIABLES -Perceived Barriers most powerful predictor of intention THE ROLE OF ADDITIONAL THEORETICAL VARIABLES -Triandis Theory : normative belief a significant contributor -Limited effect of socio-demographic factors)</p>	<p><u>Recruitment</u> -Convenience Sample -Conducted with a sample of limited record of needle stick injury <u>Measurement</u> -Response rate not reported -Items for determinants of intention identified in the literature and not through elicitation studies <u>Psychometric Quality and Response Rate</u> -RR 72% (n=172) Convenience sample -Self-report measures, may have over-reported performance</p>
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<p>4. Watson & Myers (2001) UK Which cognitive factors predict clinical glove use amongst nurses?</p>	<p>Self Report Survey -Theory of Planned Behaviour and TRA</p>	<p>103 registered nurses employed at a teaching hospital -25% of sample worked in A&E, and other general wards</p>	<p><u>Measures of Behaviour</u> Self-reported glove use behaviour</p>	<p><u>Predictive Measures of Behaviour</u> -Intention -PBC Plus: -Perceived Barriers measured with 4 items on a 7 point scale</p>	<p><u>Predictive Measures of Intention</u> -Attitude -Subjective Norm -PBC</p>	<p><u>REPORTED BEHAVIOUR</u> - 35% said they would always wear gloves. -43.7% strongly agreed they should wear gloves <u>REPORTED PREDICTORS (Determinants) OF BEHAVIOUR</u> -The model explained 61% of actual glove use behaviour -Self report glove use significantly correlated to PBC and intention -Behaviour significantly negatively correlated with Barrier 1 'less likely to wear gloves if contact with blood is anticipated to be normal' <u>REPORTED PREDICTORS (Determinants) OF INTENTION</u> -Self-reported glove use significantly correlated with Attitude. Beta 0.632 p=<0.001 -PBC Beta 0.196 p=<0.05</p>	<p><u>Main Outcome</u> ROLE OF ATTITUDE (personal risk) ROLE OF ADDITIONAL VARIABLES -anticipated contact with blood also significant predictor of intention POWER OF INTENTION -Adding intentional variables only slightly (1%) increases explanatory power of the model</p>	<p><u>Recruitment</u> -Convenience Sample <u>Measurement</u> -Questionnaires delivered by hand by the Chief Nurse...and by hand by the investigators -Self-report questionnaire -Sig level for correlations set at < 0.01 <u>Psychometric Quality and Response Rate</u> 47.9% (n=103)</p>
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<p>5. O'Boyle et al (2001) USA</p> <p>Understanding adherence to hand hygiene recommendations: The Theory of planned behaviour</p>	<p>-Self-report survey</p> <p>-Non Participant observation</p> <p>-Theory of planned behaviour</p> <p>-Aim:</p> <ol style="list-style-type: none"> 1. Estimate adherence to hand hygiene recommendations 2. Describe relationships among motivational factors 3. Test the TPB-based theoretical model to explain self-reported and observed hand washing 	<p>120 Registered Nurses: 4 teaching hospitals in US. Intensive and Post Intensive care units</p>	<p><u>Measures of Behaviour</u></p> <ol style="list-style-type: none"> 1. Adherence to hand hygiene recommendation (Self-report) 2. Observed Hand Hygiene 2-4 months later all participants were observed using the same protocol. 	<p><u>Predictive Measures of Behaviour</u></p> <p>TPB variables:</p> <ul style="list-style-type: none"> -PBC -Intention <p>Plus: Intensity of nursing activity</p> <ul style="list-style-type: none"> -Five indicators were used to construct an index reflecting intensity of activity in the nursing units 	<p><u>Predictive Measures of Intention</u></p> <ul style="list-style-type: none"> -Attitude -Subjective Norm <p>Measures of Intention:</p> <ul style="list-style-type: none"> -HAI was also used to measure the motivational schema for hand washing 	<p><u>REPORTED BEHAVIOUR</u></p> <p>Actual Behaviour</p> <ul style="list-style-type: none"> -after completion of care -before giving care -followed closely by removing gloves. These 3 indications accounted for 88% of observed indications <p><u>REPORTED PREDICTORS (Determinants) OF BEHAVIOUR</u></p> <ul style="list-style-type: none"> -Intention -Observed Intensity of activity significantly negatively correlated to hand hygiene <p><u>REPORTED PREDICTORS (Determinants) OF INTENTION</u></p> <ul style="list-style-type: none"> -Control beliefs had a greatest effect on intention 	<p><u>Main Outcome</u></p> <p>ROLE OF PBC (The effect of PBC and its intermediate variable (Control Beliefs))</p> <p>POWER OF INTENTION</p> <p>Intention related to self-report NOT actual behaviour</p>	<p>Recruitment</p> <ul style="list-style-type: none"> Convenience Sample <p>Measurement</p> <ul style="list-style-type: none"> -Previous observational studies (Larson et al 1997) reported that inter-rater agreement for HOA scores was 100% -Rooms with one to three patients -Each room contained at least one sink. Sinks also available in halls and common work areas -Relationship with investigator <p>Psychometric Quality and Response rate</p> <ul style="list-style-type: none"> 21% (n=100) -Interruption of <u>observation</u> of hand washing would affect the outcome of observation
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<p>6. Bolman et al (2002) Holland Factors determining cardiac nurses' intentions to continue using a smoking cessation protocol</p>	<p>Self-report Survey ASE Model (Attitude, Social Influence and Self-efficacy) Aim: First goal: To facilitate the continued use of a smoking cessation protocol Second goal: to describe the applicability of ASE model; analyse the differences between intenders and non-intenders</p>	<p>Registered nurses in cardiology wards in 5 hospitals</p>	<p><u>Measures of Behaviour</u> -Use of smoking cessation protocol <u>Analysis</u> - t tests conducted to investigate differences in attitude, social influence and self-efficacy expectation beliefs between intenders and non-intenders <u>Analysis</u> Chi-square for gender, type of ward, training attended Mann-Whitney U test for level of experience Pearson correlations for ASE Concepts</p>	<p><u>Predictive Measures of Behaviour</u> ASE Model Plus: age, time worked on ward and number of hours per week, simplicity of guideline</p>	<p><u>Predictive Measures of Intention</u> -Attitude -Social Influence -Self-efficacy constructs</p>	<p><u>REPORTED BEHAVIOUR</u> -47% indicated they would probably go on to use protocol -25% convinced they would go on to use -20% unsure about continued use <u>REPORTED PREDICTORS (Determinants) OF BEHAVIOUR</u> - ASE Model explained 38% of intention to continue using the protocol <u>PREDICTORS (Determinants) OF INTENTION</u> -Only attitudinal subscales contributed to this explanation NOT social influence and self-efficacy -Intention correlated most strongly with simplicity and perceived advantaged and self-efficacy expectations -No difference in intentions found between smoking and non-smoking nurses</p>	<p><u>Main Outcome</u> ROLE OF ADDITIONAL VARIABLES -Perceived Simplicity (part of ASE Model influencing attitude) -No demographic difference between intenders and non-intenders SUBJECTIVE NORM DIFFERENCES Modelling and social support were not significantly associated with nurses intentions</p>	<p>Recruitment Convenience Sample Measurement -No elicitation studies -Small sample -Results only reflect characteristics of responders -Biased reports based on nurses expected to use protocol -Nurses that had positive attitudes higher response Psychometric Quality and Response Rate 52% (n=85) -Elicitation studies not performed but scales developed based on previous literature</p>
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<p>7. Jenner and Watson et al (2002)</p> <p>Explaining hand hygiene practice: An extended application of the Theory of Planned Behaviour</p>	<p>Cross-sectional questionnaire TPB and constructs from Health Belief Model</p> <p>Develop a theoretical framework to identify perceived cognitive and physical factors (variables) that may explain hand hygiene behaviour</p>	<p>Nurses (n=76)</p> <p>Therapists (n=17)</p> <p>Health Care Assistants (n=4)</p>	<p><u>Measures of Behaviour</u></p> <p>Target Behaviour of hand washing defined in accordance to national guidelines.</p> <p><u>Analysis</u></p> <p>-Non-parametric bivariate correlations for relationship between predictive constructs and dependant variables (intention and behaviour)</p>	<p><u>Predictive Measures of Behaviour</u></p> <p>TPB variables:</p> <p>-PBC</p> <p>-Intention</p> <p>-Attitude</p> <p>-Subjective Norm</p> <p>Plus:</p> <p>-Personal Responsibility</p> <p>-Barriers: time, availability, and number and location of sinks</p>	<p><u>Predictive Measures of Intention</u></p> <p>TPB variables</p> <p>-Attitude</p> <p>-PBC</p> <p>-SNorm</p>	<p><u>REPORTED BEHAVIOUR</u></p> <p>-Intention was a strong predictor of behaviour with 79% of cases correctly classified</p> <p>-PBC and intention significant predictors of behaviour</p> <p>-personal responsibility significantly correlates with behaviour</p> <p>-Barriers contributed an additional 10%</p> <p><u>REPORTED PREDICTORS (Determinants) OF BEHAVIOUR</u></p> <p>-Not reported</p> <p><u>REPORTED PREDICTORS (Determinants) OF INTENTION</u></p> <p>-Attitudes and personal responsibility significant predictors of intention</p> <p>-The model correctly classified 79% cases of intention to perform appropriate hand washing, and 87% of hand hygiene behaviour</p>	<p><u>Main Outcome</u></p> <p>ROLE OF ADDITIONAL THEORETICAL VARIABLES (Dominant Predictor - effect of personal responsibility)</p> <p>ROLE OF ATTITUDE (The effect of attitudes on intention)</p> <p>POWER OF INTENTION (adding variables)</p>	<p>Recruitment</p> <p>Convenience Sample</p> <p>Measurement</p> <p>-Self report measures could be a over-estimation of intention and behaviour</p> <p>-Difficulty in recruiting other professional groups</p> <p>-No elicitation studies</p> <p>Psychometric Quality and Response Rate</p> <p>34% (n=97)</p>
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<p>8. Limbert and Lamb (2002) UK Doctors use of clinical guidelines: Two applications of the theory of planned behaviour</p>	<p>Questionnaire Survey: and interviews TPB Intentions to use Clinical Guidelines</p>	<p>Study 1: 15 randomly selected Doctors (interviews) Study 2: 346 Surgeons and Physicians below level of Consultant</p>	<p><u>Measures of Behaviour</u> Guideline use by hospital doctors -Guideline for the management of acute asthma in an A&E Department -Plus antibiotic guideline use by senior doctors</p>	<p><u>Predictive Measures of Behaviour</u> TPB Variables: Intention, PBC Plus: For Antibiotic questionnaire: -individuality -evidence -Usefulness</p>	<p><u>Predictive Measures of Intention</u> TPB Variables: Attitude, PBC, SNorm</p>	<p>REPORTED BEHAVIOUR <u>Asthma Guideline</u> Respondents reported using the guideline treating Asthma patients <u>Antibiotic Guideline</u> -Attitudes towards the guideline were positive REPORTED PREDICTORS (Determinants) OF BEHAVIOUR -Not reported REPORTED PREDICTORS (Determinants) OF INTENTION -Asthma Guideline: TPB explained 58% of variance in intention -SNorm the most powerful predictor of intention -Attitude was the strongest predictor of intention to use antibiotic guideline - Perceived Usefulness also strongly correlated with intention</p>	<p>Main Outcome SUBJECTIVE NORM DIFFERENCES (Asthma Guideline) Professional status influences intentional behaviour) ROLE OF ATTITUDE (role of beliefs underpinning attitude: antibiotic guideline) ROLE OF ADDITIONAL VARIABLES (perceived usefulness)</p>	<p>Recruitment First Study: Random sample Second study: Convenience sample Measurement Elicitation studies for original questionnaire -Results of these studies may be confounded by differences between guidelines used in each study Psychometric Quality and Response Rate Questionnaire 1: 78% (n=223) Questionnaire 2: 62% (n=214) -Informed by unstructured elicitation studies</p>
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<p>9. Beatty and Beatty (2004) Anaesthetists intentions to violate safety guidelines</p>	<p>Questionnaire Survey TPB Aim: Investigate likelihood anaesthetists will violate safety guidelines on: -Visiting patients before surgery -Performing pre-anaesthetic equipment checks -Silencing of alarms during anaesthesia</p>	<p>Anaesthetists -Most common grade id consultants</p>	<p><u>Measures of Behaviour</u> Three violations to safety: 1. Failing to visit patients before surgery 2. Failure to perform pre-anaesthetic equipment checks 3. Silencing of alarms during anaesthesia <u>Analysis</u> -Mean scores on main behaviours -Pearson R on reported behaviour and intentional (and additional variables)</p>	<p><u>Predictive Measures of Behaviour</u> TPB variables: -Intention Plus: Personal Norms which includes: -moral norms -anticipated regret -personal identity -habit</p>	<p><u>Predictive Measures of Intention</u> -PBC -Attitude -Subjective Norm</p>	<p><u>REPORTED BEHAVIOUR</u> -Routine violations common (indicated by personal norm scores) <u>REPORTED PREDICTOR (Determinants) OF BEHAVIOUR</u> -Not reported <u>REPORTED PREDICTOR (Determinants) OF INTENTION</u> -All correlations to TPB variables quite low apart from normative belief -Normative beliefs (the opinion of significant others would hold about them performing the violation) -Personal norms and Habit -The more intense the anaesthetists beliefs that the violations were important, the less likely they were to violate - except for the case of alarm silencing</p>	<p>SUBJECTIVE NORM DIFFERENCES -Role of Normative Belief ROLE OF ADDITIONAL THEORETICAL VARIABLES -Personal Norms - Habit dominant coefficient across all violations ROLE OF ATTITUDE (intensity of beliefs)</p>	<p>Recruitment Convenience sample Measurement -In questionnaire-based studies of this sort...response rates of 30% are normally considered good. Psychometric Quality and Response Rate 42.7% (N=114) -bias sample, self-selecting</p>
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<p>10. Maue and Segal et al (2004) USA</p> <p>Predicting physician guideline compliance: An assessment of motivators and perceived barriers</p>	<p>TPB and TRA Questionnaire Survey</p> <p>Aim: Observe practitioners compliance with practice guidelines</p>	<p>All Practitioners: staff physicians, physician residents, interns, advanced nurse practitioners and physician assistants</p>	<p><u>Measures of Behaviour</u></p> <p>A variety of Guidelines. Although intentional measures not specifically related to each individual guideline.</p> <p><u>Guidelines</u></p> <ul style="list-style-type: none"> -24 providers implemented Dyspepsia guidelines -Oncology and haematology service implemented guidelines - COPD guidelines asthma guidelines 	<p><u>Predictive Measures of Behaviour</u></p> <p>TRA and TPB adapted for this study variables:</p> <ul style="list-style-type: none"> -PBC -Intention -Attitude -Subjective Norm <p>Plus:</p> <ul style="list-style-type: none"> - Personal control -Internal barriers: confidence, understanding and practice habits. External barriers: patient demands, time constraints, and delays in receiving lab results 	<p><u>Predictive Measures of Intention</u></p> <p>Attitude</p> <ul style="list-style-type: none"> -Subjective Norm <p>For each antecedent the lower the score the more positive the attitude, intention, subjective norm</p>	<p><u>REPORTED BEHAVIOUR</u></p> <p>The mean self-report compliance behaviour was 65%, compliance assessed by chart review was 54%</p> <p><u>REPORTED PREDICTORS (Determinants) OF BEHAVIOUR</u></p> <p>SNorm a significant determinant (social pressure) indicated a motivation to comply with guideline</p> <p>PBC also significant</p> <ul style="list-style-type: none"> -Past behaviour: similar to current behaviour -External Barriers more inhibiting than internal barriers <p><u>REPORTED PREDICTORS (Determinants) OF INTENTION</u></p> <p>Positive correlations between: attitude, SNorm, PBC, internal barriers,</p>	<p><u>Main Outcome</u></p> <p>ROLE OF PBC (r=0.73) Most significant</p> <ul style="list-style-type: none"> -Internal barriers most significant in PBC <p>PROFESSIONAL SUBJECTIVE NORM DIFFERENCES</p> <p>ROLE OF NON-THEORETICAL ADDITIONAL VARIABLES</p> <p>(Organisational factors as external barriers inhibitor $r = -0.50$, $p < .05$)</p> <p>MEASUREMENT OF INTENTION (intention and self-report not significant (r=0.13)</p>	<p>Recruitment</p> <p>Convenience Samples Survey 1 administered immediately preceding guidelines introduction to measure predictors of guideline compliance</p> <p>Survey 2: Administered 4 months after implementation of guidelines</p> <p>Measurement</p> <ul style="list-style-type: none"> -Problem with self-report: biased by response social desirability, acquiescence -Not a random sample <p>Response Rate</p> <p>Survey 1 63% (n=106)</p> <p>Survey 2: 51% (n=36)</p>
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<p>11. Puffer and Rashidian (2004) UK Practice nurses intentions to use clinical guidelines</p>	<p>Questionnaire Survey: TPB Examine <u>Utility</u> of TPB in explaining variations in practice nurses intentions to provide smoking cessation advice according to CHD Guidelines</p>	<p>Registered Practice Nurses (all female)</p>	<p><u>Measures of Behaviour</u> Elicitation studies carried out: semi-structured interviews</p>	<p>Behaviour -Not Measured</p> <p>Intention TPB variables: -PBC -Intention -Attitude -Subjective Norm</p> <p>Plus: -Past Behaviour</p>	<p><u>Measures of Intention</u> Dependant variable: behavioural intention, measured with 2 items</p>	<p>REPORTED BEHAVIOUR Smoking cessation advice</p> <p>REPORTED PREDICTORS (Determinants) OF BEHAVIOUR -Only predictors of intention measured</p> <p>REPORTED PREDICTORS (Determinants) OF INTENTION -PBC had the strongest relationship with intention (r=0.546) -Attitude (r=0.450) -Past Behaviour (r=0.382) -Indirect PBC (r=0.306) -Indirect attitude (r=0.306) -indirect SNorm (r=0.300) -Indirect measures of attitude and PBC explained</p>	<p>Main Outcome ROLE OF PBC (Ability to carry out behaviour strongest correlation with intention r=0.546) ROLE OF NON-THEORETICAL ADDITIONAL VARIABLES (Inclusion of past behaviour, age, and work characteristics did not influence behaviour: but not reported) -Belief items indicate lack of time and training</p>	<p>Recruitment Convenience Sample</p> <p>Measurement -Elicitation studies (semi-structured interviews) -Reliability of items tested -Only one item of Subjective Norm measured -Limited sample</p> <p>Response Rate RR 54% (n=48)</p>
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<p>12. Foy and Walker et al (2005) UK Theory-based identification of barriers to quality improvement: induced abortion care</p>	<p>Questionnaire Survey Based on the TPB Elicitation studies based on previous lit review and case studies Based on: INDUCED ABORTION CARE 1. Offer of an assessment appointment within 5 days 2. Supply of contraceptives at discharge</p>	<p>-26 hospitals in Scotland - All clinical staff in 26 Gynaecology units - Part of a cluster randomised controlled trial - The study population comprised all clinical staff involved in abortion care at the 13 units randomised to the intervention arm</p>	<p><u>Measures of Behaviour</u> Compliance with the guideline 'The Care of women requesting induced abortion'</p>	<p><u>Predictive Measures of Behaviour</u> TPB variables: -PBC (five items) -Intention -Attitude -Subjective Norm Plus: -Specific facilitators and barriers (brief open-ended questions)</p>	<p><u>Predictive Measures of Intention</u> -Attitude (four items) -Subjective Norm (three bipolar items)</p>	<p>REPORTED BEHAVIOUR -Offer of assessment 45.8% (median compliance) -To supply contraceptive at discharge. 58.6% -Mean intentions to comply with both behaviours were high. REPORTED PREDICTORS (Determinants) OF BEHAVIOUR -Intention and PBC best explained compliance to the 2 behaviours -Mean perceived PBC was lower for the offer of assessment appointment - PBC was added to intention – predicting 15% of variation in unit compliance REPORTED PREDICTOR (Determinants) OF INTENTION 'Subjective Norm' best predicted intention</p>	<p>Main Outcome PROFESSIONAL SUBJECTIVE NORM DIFFERENCES (Subjective norm most influential on assessment appointment) ROLE OF PBC (on supply of contraceptives, but r 0.152 does not look significant see table 5) -Organisational constraints for PBC –in this instance cost POWER OF INTENTION (increased when PBC was added to intention predicting 15% of variation in unit compliance)</p>	<p>Recruitment Random sample Measurement -Elicitation studies -Pilot tested questionnaire -Measures of psychological variables all achieved -Cronbach's Alpha acceptable Response Rate Response to survey: 74% (n=151) from the 12 units that participated in the survey</p>
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<p>13. Pessoa-Silva and Posay-Barber et al (2005) Switzerland Attitudes and perceptions toward hand hygiene among healthcare workers caring for critically ill neonates</p>	<p>Questionnaire Survey Based on TPB To identify beliefs and perceptions associated with intention to comply with hand hygiene</p>	<p>Health Care Workers 49 Nurses 12 Physicians University of Geneva Hospitals -Conducted in one neo-natal unit -Hand hygiene facilities conveniently located throughout the unit</p>	<p><u>Measures of Behaviour</u> Intention to comply with hand hygiene was the Dependant Variable</p>	<p><u>Predictive Measures of Behaviour</u> -Intention -Perception of risk of transmission -Motivation: “Do you feel you can improve your compliance with hand hygiene”</p>	<p><u>Predictive Measures of Intention</u> -Attitude -Perceived difficulty -Perceived SNorm -Perceived behavioural norm -Perception of risk</p>	<p><u>REPORTED BEHAVIOUR</u> -Behaviour reported as intentional behaviour <u>REPORTED PREDICTORS (Determinants) OF BEHAVIOUR</u> -A positive intention to comply with hand hygiene was found amongst 64% of respondents -Rate of intention as low as 18% -Of the 49 nurses and 12 physicians responding 75% believed that they could improve their compliance with hand hygiene <u>REPORTED PREDICTOR (Determinants) OF INTENTION</u> -Intention to comply associated with the perceived control -And a positive perception of how superiors valued hand-hygiene -A positive attitude also influential</p>	<p><u>Main Outcome</u> ROLE OF PBC (Intention to comply perceived control over the difficulty to perform hand hygiene – reported as odds ratio 4.01) PROFESSIONAL SUBJECTIVE NORM DIFFERENCES (Influence of professional colleagues) ROLE OF ATTITUDE Attitude also an influence</p>	<p>Recruitment Convenience sample Measurement -Infection control staff distributed the questionnaire – did this reinforce social desirability bias? -Social and environmental pressure may account for behaviour rather than intention Response Rate 76% (n=61)</p>
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<p>14. Bonnetti and Johnston et al (2010) UK Applying psychological theories to evidence-based clinical practice: identifying factors predictive of placing preventative fissure sealants</p>	<p>Questionnaire Survey Design was a predictive study with theoretical variables and outcomes. -TPB - Social Cognitive Theory -Common Sense Self-regulation Model -Operant Learning Theory Implementation Intention, Stage model and knowledge (a non-theoretical model) This study explored the usefulness of a range of models to predict placing of fissure sealants</p>	<p>General Registered Dental Practitioners. Target sample size of 200 based on recommendation (Green 1991) to have a minimum of 162 when undertaking multiple regression analysis with 14 predictor variables -GDP 58% male. Sample</p>	<p><u>Measures of Behaviour</u> Two behaviours: -Behavioural Simulation (scenario decision-making) – three elements identified by SIGN guideline and , expert opinion -Behavioural intention: -Assessed by three items</p>	<p><u>Predictive Measures of Behaviour</u> Constructs that predicted behavioural simulation were: -Scenario decision-making -Behaviour intention</p>	<p><u>Predictive Measures of Intention</u> -More evidence-based behaviour may be achieved by influencing beliefs about the positive outcomes and building a habit as part of placing them!!</p>	<p>REPORTED BEHAVIOUR Behavioural Simulation -Intention Beta 0.48 p<.01 REPORTED PREDICTORS (Determinants) OF BEHAVIOUR Behavioural simulation predictors: -TPB 31% -SCT 29% -OLT 30% -II 7% -Habit (OLT), timeline acute (CS-SRM) and outcome expectancy (SCT) entered the equation together explaining 38% of variance -Common Sense Model did not explain any variance in intention REPORTED PREDICTOR (Determinants) OF INTENTION -Habit 0.35 Beta p=0.001 -Attitude 0.25 Beta</p>	<p>Main Outcome ADDITIONAL THEORETICAL VARIABLES (Habit as a predictor of INTENTION) ROLE OF ATTITUDE (Direct and indirect Normative Belief) POWER OF INTENTION (Power of various models tested, AND VARIABLES IN MODELS)</p>	<p>Recruitment Random Sample: Scottish general practice board list by a statistician using a list of random sampling numbers Measurement -Elicitation studies semi-structured interviews -Postal reminders sent at 2, 4 and 6 weeks - internal consistency of items measured by Cronbach’s alpha if <6.0 then item removed Response Rate 29% (n=120/407)</p>
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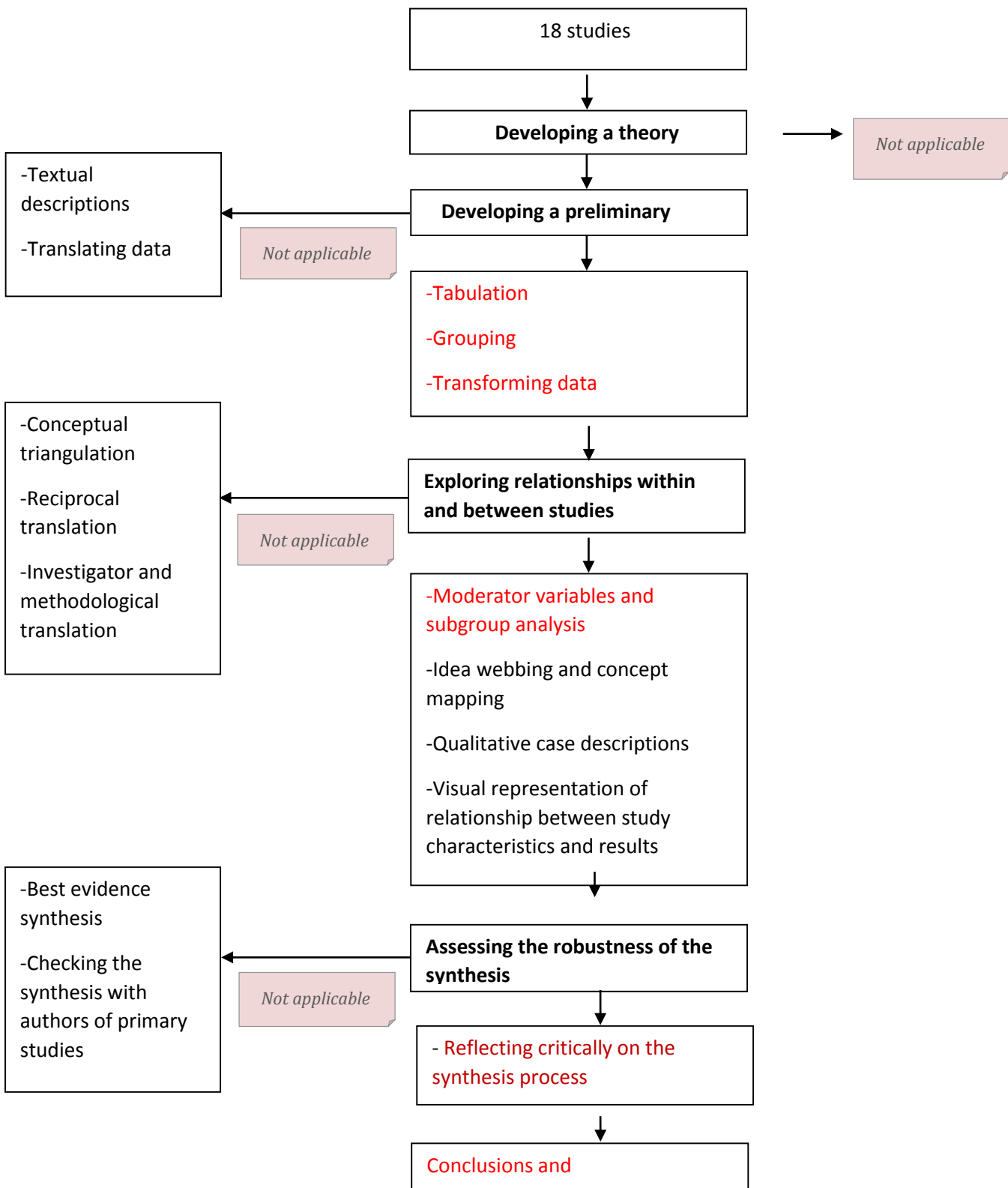
<p>15. Kortteisto et al (2010) Finland Healthcare professional s’ intentions to use clinical guidelines: a survey using the theory of planned behaviour</p>	<p>Questionnaire Internet Survey -TPB -Finish Clinical Guidelines evolving to be in electronic health record. Discover the general level of guideline use : Do healthcare pro’s have a negative or positive intention toward guideline use? -Do and how do healthcare pro’s differ in their intentions?</p>	<p>-Nurses, physicians, and other HCPs -Finnish healthcare organisations , within three hospital districts Units of Dental Care, radiology, laboratory workers were excluded</p>	<p><u>Measures of Behaviour</u> Clinical Practice Guideline use in general -The target behaviour is considered to involve a professionals knowing use of patient specific guidelines in clinical decision making</p>	<p><u>Predictive Measures of Behaviour</u> Behaviour: Behavioural intention: -The Dependent Variable was intention -Profession and Organisational characteristics also considered: -Individual variables -Gender -Age -Primary Care</p>	<p><u>Predictive Measures of Intention</u> TPB variables: -PBC -Attitude -Subjective Norm -Attitude measured by 3 behavioural beliefs -Subjective Norm assessed by three normative beliefs about social pressures to use clinical guidelines -PBC assessed with 6 controlled beliefs about context</p>	<p><u>REPORTED BEHAVIOUR</u> Intention to use clinical guidelines in practice more often positive than negative <u>REPORTED PREDICTORS (Determinants) OF BEHAVIOUR</u> -Overall 18% indicated absolutely positive intention -30% positive intention -1% indicated absolutely negative -4% negative views <u>REPORTED PREDICTORS (Determinants) OF INTENTION</u> -Overall regression model explained only 36% of intention -Physicians main determinant PBC -Nurses, and other Health Care Pros the main determinant was SNorm</p>	<p><u>Main Outcome</u> POWER OF INTENTION (TPB did not capture a large proportion of intention) ROLE OF PBC (a significant predictor of be intention for physicians) PROFESSIONAL SUBJECTIVE NORM DIFFERENCES (nurses subjective norm a significant predictor of intention)</p>	<p><u>Recruitment</u> Convenience Sample <u>Measurement</u> -RR attempted to be improved: email invitation followed up by two reminders -Pilot Questionnaire increased response rate -Purely questionnaire-based, no observation -Does not take into account effects of additional variables -Limited explanation of intentions as a stand alone model -Cultural differences in intention (Finnish) <u>Response Rate</u> RR 36% (n=806)</p>
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<p>16 Leitlen <i>et al</i> (2011) Factors influencing Dutch practice nurses' intention to adopt a new smoking cessation intervention</p>	<p>Questionnaire Survey The I-Change Model Establish differences in intentions and determinants of intention between adopters and non-adopters</p>	<p>Practice Nurses and Nurse Practitioners working in General Practice</p>	<p><u>Measures of Behaviour</u> Adopting a new smoking intervention</p>	<p><u>Predictive Measures of Behaviour</u> Not measured. Intention was only predictor of behaviour</p>	<p><u>Predictive Measures of Intention</u> -Attitude -Social Influence -Self-efficacy</p>	<p><u>REPORTED BEHAVIOUR</u> The majority of practice nurses did not intend to adopt the intervention <u>REPORTED PREDICTORS (Determinants) OF BEHAVIOUR</u> Not measured <u>REPORTED PREDICTORS (Determinants) OF INTENTION</u> Adopters -Positive attitude -Perceived social influence (social norms and support) -No differences in differences in demographics</p>	<p><u>Main Outcome</u> Intention to adopt influenced by: Attitude Statistically significant $p < .05$ Social Norms $p < .05$</p>	<p>Recruitment Self-selecting Measurement Role differences: A potential mediator Response Rate Not reported ->20% of questionnaires not appropriately completed</p>
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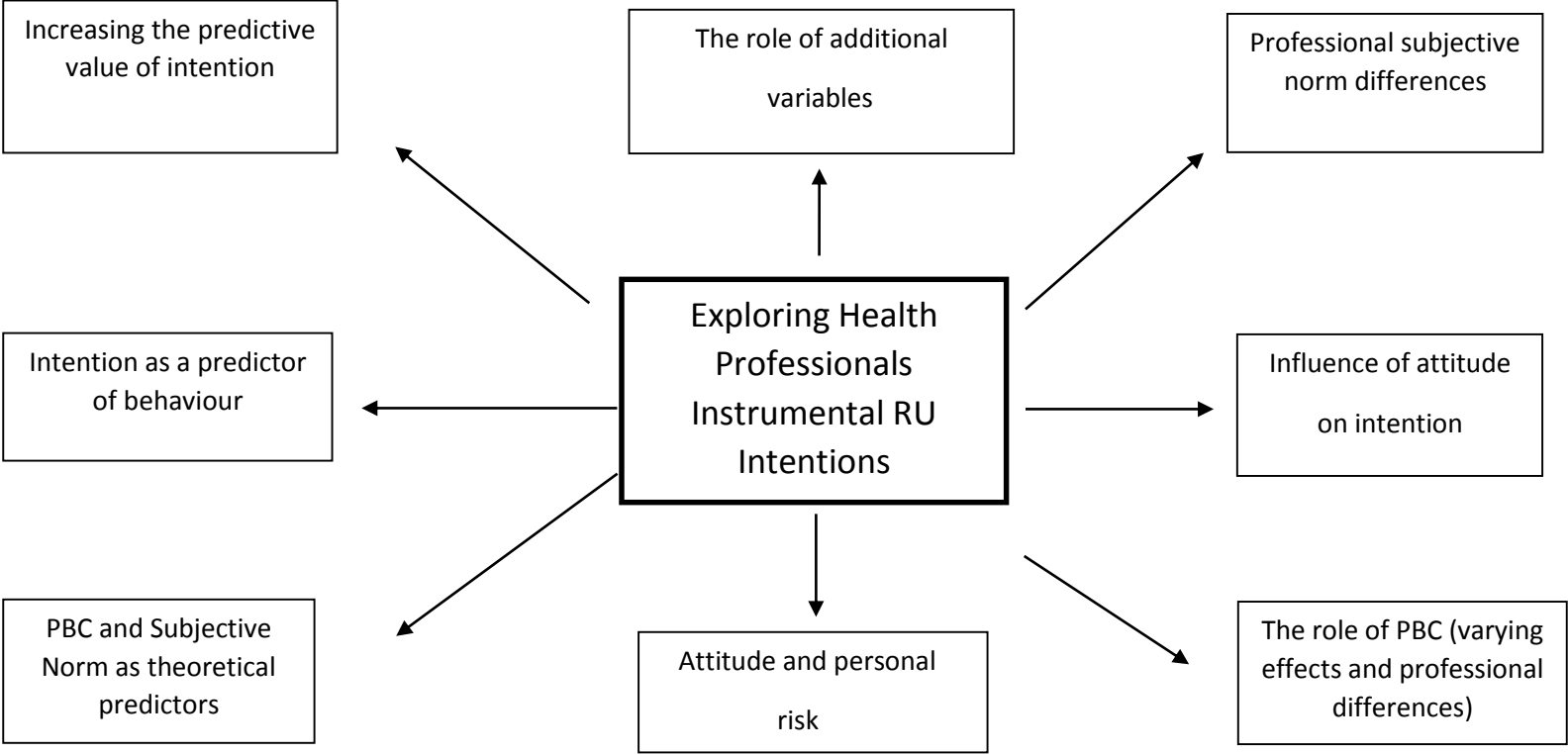
<p>17 Buenestado <i>et al</i>, (2013) Evaluating acceptance and user experience of a guideline- based clinical decision support system execution platform</p>	<p>Questionnaire Survey Technology Acceptance Model Aim: Understand intention of Paediatrician Physicians towards prolonged (3 month) use of a Computerised Asthma Clinical Guidelines for diagnosis and treatment Is intention modified by continued use</p>	<p>Spain Basque Health care services</p>	<p><u>Measures of Behaviour</u> Two CCGPs, one for the diagnosis and initial treatment, and the other on continuation of treatment</p>	<p><u>Predictive Measures of Behaviour</u> Intention Habit</p>	<p><u>Predictive Measures of Intention</u> Determinants identified in Technology Acceptance Model: -Perceived Usefulness (PU) -Perceived Ease of Use (PEU) -Compatibility -Attitude -SNorm</p>	<p><u>REPORTED BEHAVIOUR</u> -Initial disposition to use e- guides is good <u>REPORTED PREDICTORS</u> <u>(Determinants) OF</u> <u>BEHAVIOUR</u> -Lower values in compatibility and habit indicate difficulty in integrating into daily routine <u>REPORTED PREDICTORS</u> <u>(Determinants) OF</u> <u>INTENTION</u> 'Facilitators' the variable most strongly associated with intention</p>	<p><u>Main Outcome</u> Intention measured after a few weeks <u>Facilitators:</u> -Perceived Usefulness -Attitude -SNorm</p>	<p>Recruitment Convenience Sample Measurement -No elicitation study -Questionnaires for 8 physicians Response Rate -8 volunteers</p>
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18. Perez <i>et al</i> (2014) TPB can help to understand processes underlying the use of two emergency medicine diagnostic imaging rules	Questionnaires Survey TPB Aim: Comparing intentions from 2 diagnostic imaging rules in the Emergency Department	Canada Physicians in Emergency Department	<u>Measures of Behaviour</u> Use of -C Spine Rule (in one hospital) -CT Head Rule (in one hospital)	<u>Predictive Measures of Behaviour</u> Intention	<u>Predictive Measures of Intention</u> TPB predictive variables -Attitude -SNorm -PBC	<u>REPORTED BEHAVIOUR</u> -Intention only associated with actual behaviour in one hospital (for CCR) not for CDR <u>REPORTED PREDICTORS (Determinants) OF BEHAVIOUR</u> -Not reported <u>REPORTED PREDICTORS (Determinants) OF INTENTION</u> -Attitudes, and subjective norms predictive of intention in both hospitals	<u>Main Outcome</u> -Intention significantly associated with actual behaviour for CCR -Constructs outside TPB should be considered to understand CRDS	<u>Recruitment</u> -Randomised sample <u>Measurement</u> -No elicitation study <u>Response Rate</u> - 223 of the 378 eligible physicians completed their assigned baseline survey
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APPENDIX C. SYSTEMATIC REVIEW: NARRATIVE SYNTHESIS FLOW DIAGRAM

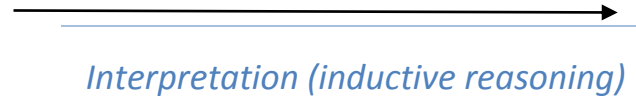


APPENDIX D. SYSTEMATIC REVIEW. NARRATIVE SYNTHESIS, IDENTIFYING MAIN OUTCOMES



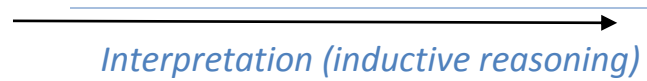
**APPENDIX E. SYSTEMATIC REVIEW: NARRATIVE SYNTHESIS,
GROUPING MAIN OUTCOMES**

-Influence of attitude on intention
-Attitude and Personal risk
-Intention as a predictor of behaviour
-PBC and Subjective Norm as theoretical predictors



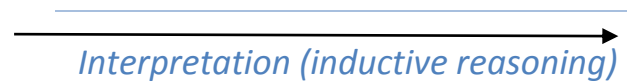
Theoretically-based variables
as dominant predictors of
intention and intention of
behaviour

-Professional Subjective Norm Differences
-Varying Professional effects of Perceived
Behavioural Control (PBC)



Differences and similarities in
how health professional
groups form intentions

-The role of additional variables
-Increasing the predictive value of Intention



Competing explanations for
the prediction of intention
and intention on behaviour

APPENDIX F. NARRATIVE SYNTHESIS: SYSTEMATIC REVIEW: Theoretically based variables as dominant predictors of intention (Group 1)

Predictor Variable	Source	Intention Model	Health Professional Group	Behaviour	Predictor and Statistical Significance
Attitude or Behavioural Belief	Watson & Myers (2001)	TRA and TPB	Nurses	Glove use (when potential for blood exposure)	r= 0.63 (attitude)
	Limbert and Lamb (2002)	TPB	Surgeons and Physicians	Prescribing Antibiotics Guideline	r= 0.86 p= < 0 .001 (attitude)
	Bonetti <i>et al</i> (2010)	TPB	Dental Practitioners	Placing preventative fissure sealants	Beta 0.29 p=0.01 (behavioural belief)
	Leitlen <i>et al</i> (2011)	I-Change	Practice Nurses, Nurse Practitioners	Smoking Cessation Intervention	t= -7.36 p=<0.001 (attitude)
	Perez <i>et al</i> (2014)	TPB	Physicians	C Spine and CT Head Rules	beta=0.4 p=<0.001 (attitude)

Subjective Norm or Normative Belief	Godin <i>et al</i> (1998)	TPB	Physicians	Glove use (contact with body fluids)	Odds Ratio 14.61 p=<.0001 (subjective norm)
	Limbert and Lamb (2002)	TPB	Junior Doctors	Acute Asthma Guideline	r=0.71 p= < 0 .001 (subjective norm)
	Beatty and Beatty (2004)	TPB	Anaesthetists	Anaesthetists Safety Guidelines (pre-op visits)	Mean 67.9% (normative belief)
	Foy <i>et al</i> , (2005)	TPB	All Clinical Staff involved abortion care	Offer of assessment appointment induced abortion	r=0.52 p=<0.01 (subjective norm)
	Kortteisto <i>et al</i> (2010)	TPB	Nurses, other Health Care Professionals	General Guideline use	beta= 0.33 p = <0.001 (subjective norm)

	Leitlen <i>et al</i> (2011)	I-Change	Practice Nurses, Nurse Practitioners	Smoking Cessation Guidelines	t=-0.71 p=<0.001
	Perez <i>et al</i> (2014)	TPB	Physicians	C Spine and CT Head Rules	r=0.26 p=<0.001
PBC or Control Belief	Levin (1999)	TRA, TPB	Nurses and Laboratory workers	Glove Use (when potential for blood exposure)	R2 0.78 p = < .01 (PBC)
	O'Boyle <i>et al</i> (2001)	TPB	Nurses	Adherence Hand Hygiene	r= 0.557 p < 0.05 (Control Beliefs)
	Puffer and Rashidian (2004)	TPB	Nurses	Smoking cessation (CHD Guidelines)	r= 0.546 p= < 0.001 (PBC)
	Pessoa-Silva <i>et al</i> (2005)	TPB	Nurses and Physicians	Hand Hygiene with Neonates	Odds Ratio 4.01 p = < .01 (PBC)

	Foy and Walker (2005)	TPB	All Clinical Staff involved abortion care	Offering contraceptive supplies at discharge	r= 0.15 (PBC)
	Kortteisto <i>et al</i> (2010)	TPB	Physicians	General Guideline use	beta 0.45 p = <0.001
	Buenestado <i>et al</i> , (2013)	TAM	Physicians	Computerised Asthma Guidelines	r=0.89

APPENDIX F. SYSTEMATIC REVIEW: Studies which measured intention and the association with behaviour (Group 1)

Intention	Levin (1999)	TRA and TPB	Nurses and Laboratory Workers	Glove Use. (Potential for blood exposure)	Behaviour (self-report)	r=0.47 p=<0.01 (not wear in past month)
	Watson and Myers (2001)	TPB	Nurses	Glove Use. (Potential for blood exposure)	Behaviour (self-report)	r=0.69 p= < 0.01
	Godin <i>et al</i> (2000)	TPB	Physicians	Universal precautions for venipunctures	Behaviour (self-report)	r=0.50 p=<.001 (how many times adhered to UP Guidelines)
	O'Boyle <i>et al</i> (2001)	TPB	Nurses	Adherence Hand Hygiene (Self-report and observed)	Behaviour (self-report) Observed Behaviour	r =0.38 p= < .001 r=0.68 (not sig)
	Limbirt and Lamb (2002)	TPB	Junior Doctors and senior registrars	Asthma (Junior Doctors) Antibiotic (senior Doctors)	Behaviour (self-report)	Asthma r=0.40 p=<.001 Antibiotic r=0.31 p=<.001

Jenner <i>et al</i> (2002)	TPB		Nurses and Health Care Assistants	Adherence to Hand Hygiene Guidelines	Behaviour (self-report)	Beta 4.53 p=<0.001
Maue <i>et al</i> (2004)	TRA and TPB		Physicians Advanced Registered Nurse Practitioners	General Guideline use	Behaviour (self-report)	R= 0.13
Bonetti <i>et al</i> (2010)	TPB		Dental Practitioners	Physicians and (Placing Fissure Sealants)	Behaviour (Simulated)	r= 0.50 p= < 0.01
Perez <i>et al</i> (2014)	TPB		Physicians	C Spine Rule CT Head Rule	Behaviour (self-report)	OR 1.79 p= < 0.01 OR 1.05 p= 0.60

APPENDIX F. SYSTEMATIC REVIEW: Differences and similarities in how Health Professionals form intentions (by behaviour) (Group 2)

Behaviour	Professional Group	Main variables predictive of Intention
<p>Glove Use Godin <i>et al</i> (1998)</p> <p>Levin (1999)</p> <p>Watson & Myers (2001)</p>	<p>Physicians</p> <p>Nurses and Laboratory Workers</p> <p>Nurses</p>	<p>Subjective Norm Odds Ratio 14.61 p= <.001</p> <p>PBC R= 0.29 p = < 0.05</p> <p>Attitude R2 0.63 p = < .01</p>
<p>Hand Hygiene O'Boyle <i>et al</i> (2001)</p> <p>Jenner <i>et al</i> (2002)</p>	<p>Critical Care Nurses</p> <p>Nurses, Therapists and HCAs</p>	<p>Control Beliefs R= 0.557 p < 0.05</p> <p>Personal Responsibility R= 0.42 p < 0.01</p>

Pessoa-Silva <i>et al</i> (2005)	Nurses and Physicians	PBC Odds Ratio 4.01 p = < .01
General Guideline Use Kortteisto <i>et al</i> (2010)	Physicians, Nurses and Other Professionals	PBC (Physicians) beta 0.45 p = <0.001 Subjective Norm (Nurses) p = <0.01 Subjective Norm (other professionals) p = <0.01
Maue <i>et al</i> (2004)	Physicians and Advanced Registered Nurse Practitioners	Internal barriers (confidence, understanding, practice habits) r = -0.73, P <0.001 (Behaviour)
Specialist Guideline Use Universal precautions for venipunctures (Godin <i>et al</i> 2000) Smoking Cessation (Bolman <i>et al</i> 2002)	Physicians Nurses	PBC – Control Beliefs, perceived Barriers R2 0.62 p < .001 Perceived Simplicity r = 0.65 p < 0.01
Smoking Cessation (Leitlen <i>et al</i> , 2011)	Practice Nurses and Nurse Practitioners	Attitude t=-7.36 p=<0.001 Subjective Norm t=-0.71 p=<0.001

<p>Acute Asthma and Antibiotic Guideline (Limbert and Lamb 2002)</p>	<p>Junior Doctors (Asthma)</p> <p>Surgeons and Physicians below level of consultant (Antibiotic Guideline)</p>	<p>Subjective Norm (Asthma) $R=0.71$ $p < 0.001$</p> <p>Attitude (Antibiotics) $r=0.61$ $p < 0.001$ Attitude (usefulness of evidence) $r = 0.86$</p>
<p>Anaesthetists Safety Guidelines (Beatty and Beatty 2004)</p>	<p>Anaesthetists</p>	<p>Normative Belief (mean scores)</p> <ul style="list-style-type: none"> - No pre-op visit = 67.9 % - No cockpit checks = 67.1 % - Silence alarms = 38.3% <p>Habit (no pre-op visit) $r=0.62$ $p < 0.01$ Habit (no cockpit checks) $r=0.79$ $p < 0.01$ Habit (silence alarms) $r=0.47$ $p < 0.01$</p> <p>(Behaviour)</p>
<p>CHD Guidelines and Smoking Cessation advice (Puffer and Rashidian 2004)</p>	<p>Practice Nurses</p>	<p>PBC $r = 0.546$ $p < 0.001$</p>

Assessment and care of induced abortion (Foy <i>et al</i> , 2005)	All Clinical Staff involved abortion care	Subjective Norm R=0.52 p<0.01 (Offer assessment appointment) PBC R= 0.15 p not reported (offering contraceptive supplies at discharge)
Placing preventative fissure sealants (Bonnetti <i>et al</i> 2010)	Dental Practitioners	Habit R= 0.75 p = <0.001 (Behaviour)
Clinical Decision Support Aids		
Buenestado <i>et al</i> , (2013) Paediatricians use of decision-aid	Physicians	Perceived Usefulness (PU) r =0.84 Perceived Ease of Use (PEU) r=0.87 Attitude r=0.88
Perez <i>et al</i> (2014) Use of clinical decision rules	Physicians	Attitude r=0.4 p=<0.001 Subjective Norms r=0.26 p=<0.001

APPENDIX F. SYSTEMATIC REVIEW: Differences in how professional groups form intentions (Group 2)

Professional Group	Source	Behaviour	Main Predictor of Intention
Nurses	Levin (1999)	Glove use when potential for blood exposure	PBC R= 0.29 p = < 0.05
	Watson & Myers (2001)	Glove use when potential for blood exposure	Attitude R ² 0.63 p = < .01
	Boyle et al (2001)	Hand Hygiene	Control Beliefs R= 0.557 p < 0.05
	Jenner et al (2002)	Hand Hygiene	Personal Responsibility R= 0.42 p < 0.01
	Pessoa-Silva and Posfay-Barbe et al (2005)	Hand Hygiene	PBC Odds Ratio 4.01 p = < .01
	Kortteisto et al (2010)	General Guideline Use	Subjective Norm (Nurses) p = <0.01
	Maue et al (2004)	General Guideline Use	PBC (internal barriers) r = -0.73, P <0.001
	Bolman et al (2002)	Smoking Cessation Guidelines	Simplicity r = 0.65 p < 0.01
	Puffer and Rashidian (2004)	CHD Guidelines and Smoking Cessation advice	PBC r= 0.546 p= < 0.001

	Foy and Walker (2005)	Abortion Care	Subjective Norm $R=0.52$ $p<0.01$ (Offer of assessment appointment) PBC $R= 0.15$ p not reported (Offering contraceptive supplies at discharge)
	Leitlen <i>et al</i> (2011)	Smoking Cessation	Attitude $t=-7.36$ $p<0.001$ Subjective Norm $t=-0.71$ $p<0.001$
Physicians	Godin <i>et al</i> (1998)	Glove use when potential for body fluid or blood exposure	Subjective Norm Odds Ratio 14.61 $p<.0001$
	Pessoa-Silva <i>et al</i> (2005)	Hand Hygiene	PBC Odds Ratio 4.01 $p = < .01$
	Kortteisto <i>et al</i> (2010)	General Guideline Use	Subjective Norm (Nurses) $p = <0.01$
	Maue and Segal <i>et al</i> (2004)	General Guideline Use	PBC (internal barriers) $r = -0.73$, $P <0.001$
	Godin <i>et al</i> (2000)	Universal precautions for venipunctures	Perceived Barriers $R^2 0.62$ $p < .001$ (to be performed in next three months)

	Limbirt and Lamb (2002)	Asthma Guideline (Junior Doctors)	Subjective Norm $R=0.71$ $p < 0.001$
		Antibiotic Guideline (Surgeons and Physicians)	Attitude (usefulness of evidence) $r = 0.86$
	Beatty and Beatty (2004)	Anesthetists Safety Guidelines	Personal Norm Habit (no pre-op visit) $r=0.62$ $p < 0.01$ Personal Norm Habit (no cockpit checks) $r=0.79$ $p < 0.01$ Personal Norm Habit (silence alarms) $r=0.47$ $p < 0.01$ Subjective Norm $R=0.52$ $p < 0.01$ (Offer of assessment appointment)
	Foy and Walker (2005)	Abortion Care	PBC $R= 0.15$ p not reported (Offering contraceptive supplies at discharge)
	Buenestado <i>et al</i> (2013)	Clinical Decision Support Aids	Perceived Usefulness (PU) $r =0.84$ Perceived Ease of Use (PEU) $r=0.87$ Attitude $r=0.88$ All $p < .05$
	Perez <i>et al</i> (2014)	Decision Rules	Attitude $r=0.4$ $p < 0.001$ Subjective Norms $r=0.26$ $p < 0.001$

Other Health Care Groups			
<u>Dental Practitioners</u>	Bonnetti <i>et al</i> (2010)	Placing preventative fissure sealants	Habit R= 0.75 p = <0.001
<u>Laboratory Workers</u>	Levin (1999)	Glove use when potential for blood exposure	PBC R ² 0.78 p = < .01
<u>Other Professionals</u>	Kortteisto <i>et al</i> (2010)	General Guideline Use	Subjective Norm (Nurses) p = <0.01
	Foy <i>et al</i> , (2005)	Abortion Care	Subjective Norm R=0.52 p=<0.01 (offer of assessment appointment) PBC R= 0.15 (Offering contraceptive supplies at discharge)

APPENDIX F. SYSTEMATIC REVIEW: Competing explanations for the prediction of intention and behaviour (Group 3)

Behaviour	Professional Group	Additional Variable (extension of model)	Association to Intention	Association to Behaviour	Theoretical Base
<u>Glove Use</u>					
Godin <i>et al</i> (1998)	Physicians	Habit of wearing gloves	Odds Ratio 3.01 p=<.0032	NR	Not Identified
		Perceived risk of infection	Odds Ratio 2.77 p=<.0030		
		Age Group (year) 20-39	Odds Ratio 2.77 p=<.0041		
Levin (1999)	Nurses and Lab Workers	Comparative Risk	r=.07 not significant	NR	Health Belief Model (comparative risk)
Watson and Myers (2001)	Nurses	Perceived Barrier: If volume of blood is minimal	NR	r= - 0.43 p= < 0.01	Ajzen (1991) Extension of TPB
		If short of time	NR	r= - 0.50 p= < 0.01	

Hand Hygiene O'Boyle <i>et al</i> (2001)	Critical Care Nurses	Intensity of Activity	NR	$r = - 0.32$ $p < 0.05$ (Observed)	Not Identified
Jenner <i>et al</i> (2002)	Nurses, Therapists and Health Care Assistants	Personal Responsibility Time Availability Number and Location of sinks	$r = 0.42$ $p = < 0.01$	$r = 0.36$ $p = < 0.01$ $r = 0.40$ $p = < 0.01$ $r = 0.30$ $p = < 0.01$	Health Model Belief
General Guideline Use Maue and Segal <i>et al</i> (2004)	Physicians and Advanced Registered Nurse Practitioners	Internal barriers External Barriers Perceived Barriers	$r = - 0.50$, $P < 0.0029$ $r = - 0.39$, $P < 0.025$ NR	 $r = - 0.47 = < 0.006$	NR
Specialist Guideline Use Bolman <i>et al</i> (2002)	Nurses	Perceived Simplicity Level of experience	$r = 0.65$ $p < 0.01$ $r = 0.26$ $p < 0.05$	NR	NR

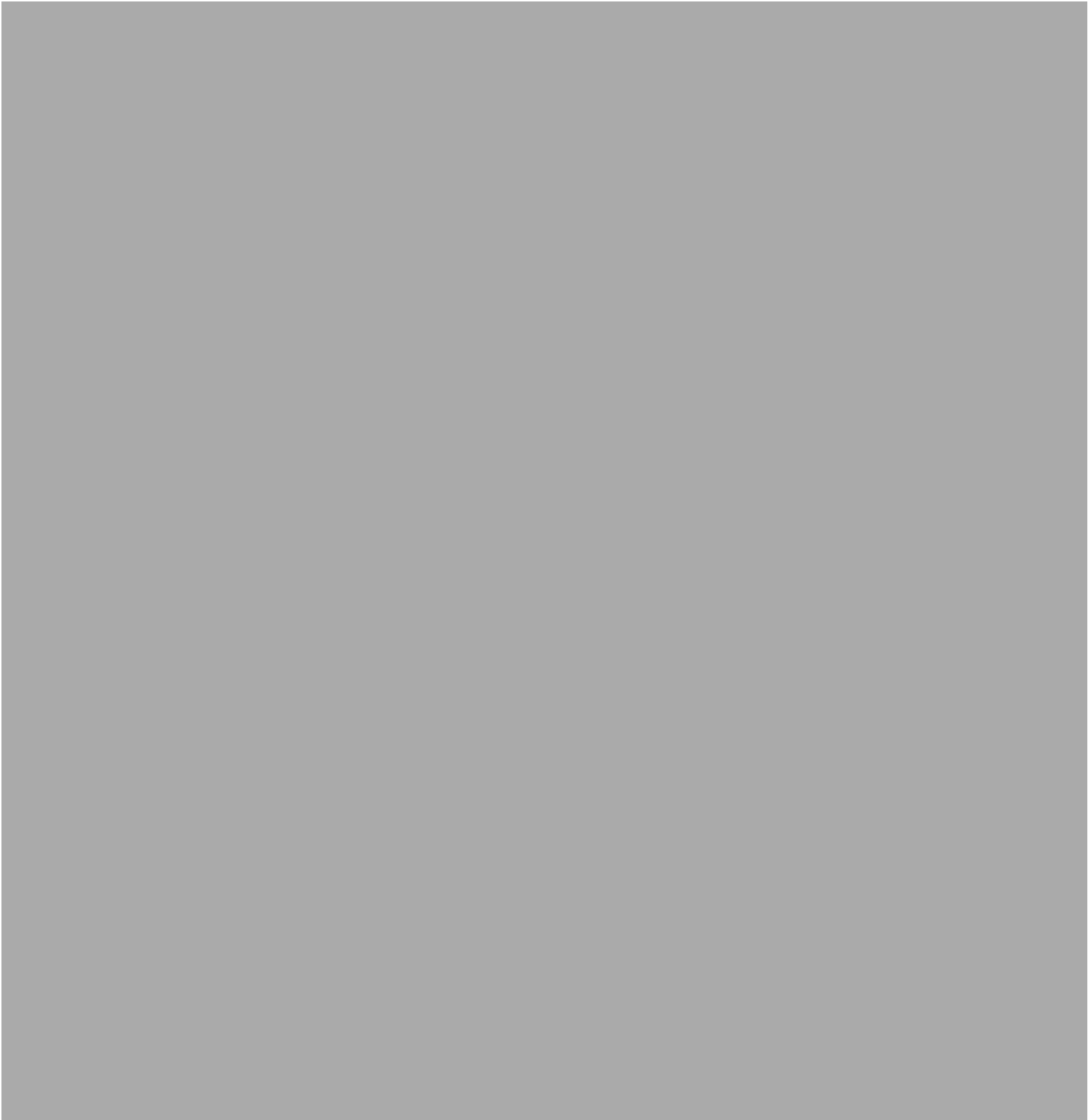
(Smoking Cessation)		Nurses own smoking behaviour	r= 0.22 p < 0.05		
Beatty and Beatty (2004) (Safety Guidelines)	Anaesthetists	Personal (Habit) (no pre-op visit)	Norm (no pre-op visit) r=0.62 p=< 0 .01	NR	Ajzen (1991) Extension of TPB
		Personal (Habit) (no cockpit checks)	Norm (cockpit checks) r=0.79 p=< 0 .01		
		Personal (Habit) (alarms)	Norm (silence alarms) r=0.47 p=< 0.01		
Bonetti <i>et al</i> (2010) (Placing Fissure Sealants)	Dental Practitioners	Habit	Beta 0.59 p=< 0.001	Beta 0.35 p=< 0.001	Blackman (1974) Operant Learning Theory
Leitlen <i>et al</i> (2011) (Smoking Cessation)	Nurse Practitioners Practice Nurses	Satisfaction	Odds ratio 0.42	NR	

Buenestado <i>et al</i> (2013)	Physicians	Facilitating Factors (educational preparation) Habit	R= 0.98 p=<.05 Mean difference p=<.05	NR	Extension of Technology Acceptance Model (TAM)
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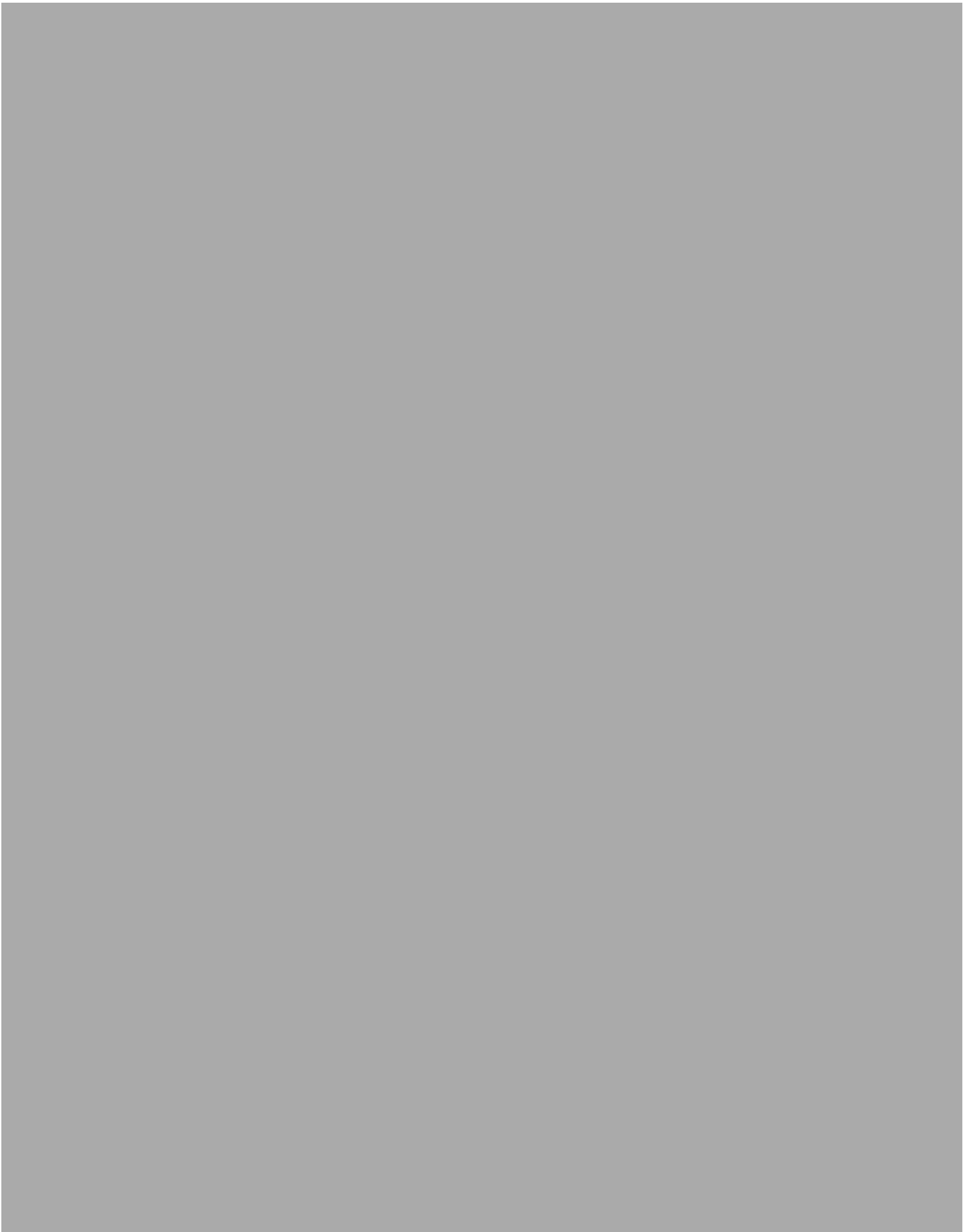
APPENDIX G: UNIVERSITY ETHICAL APPROVAL

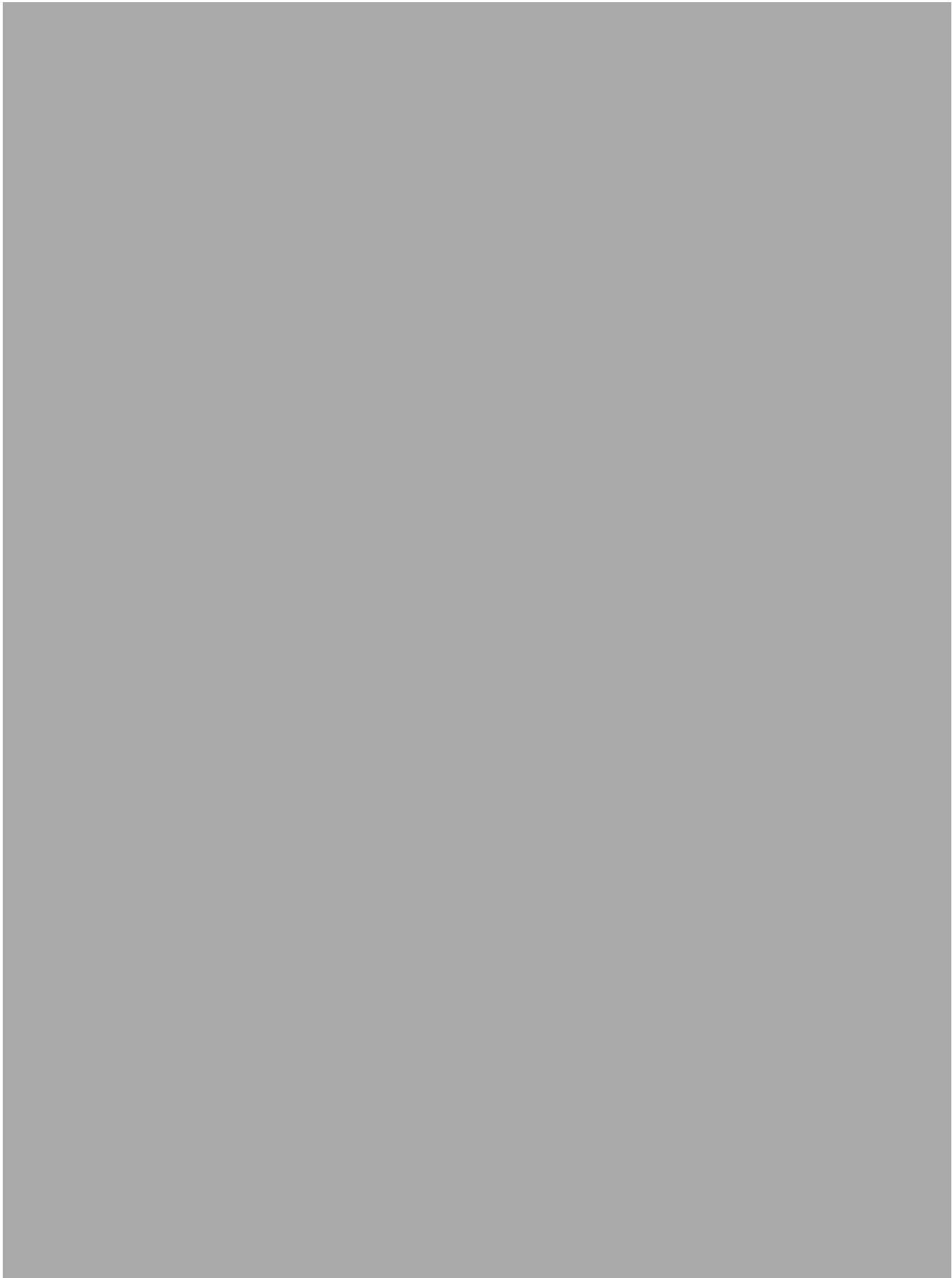
**UNIVERSITY OF BIRMINGHAM
APPLICATION FOR ETHICAL REVIEW**

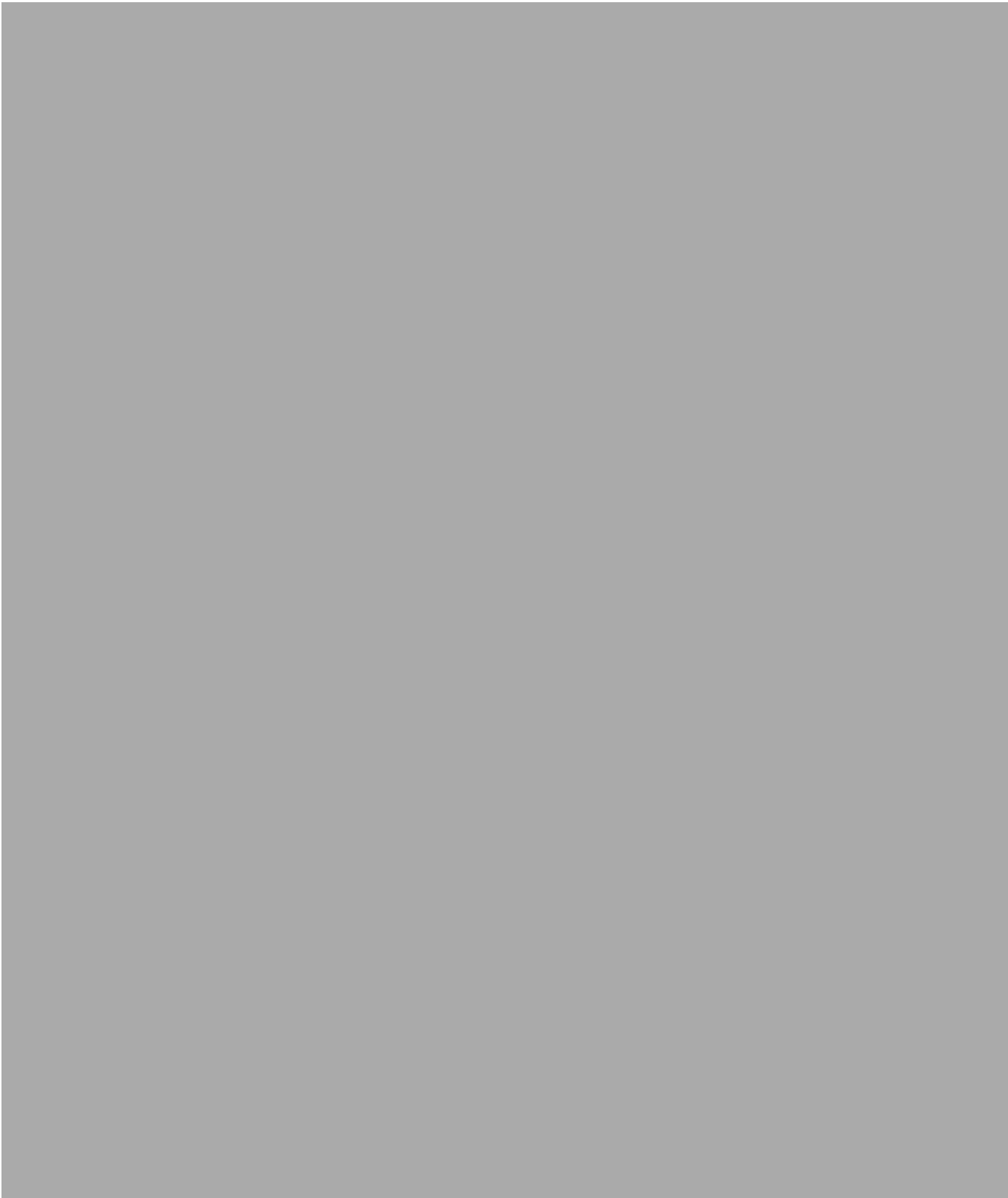


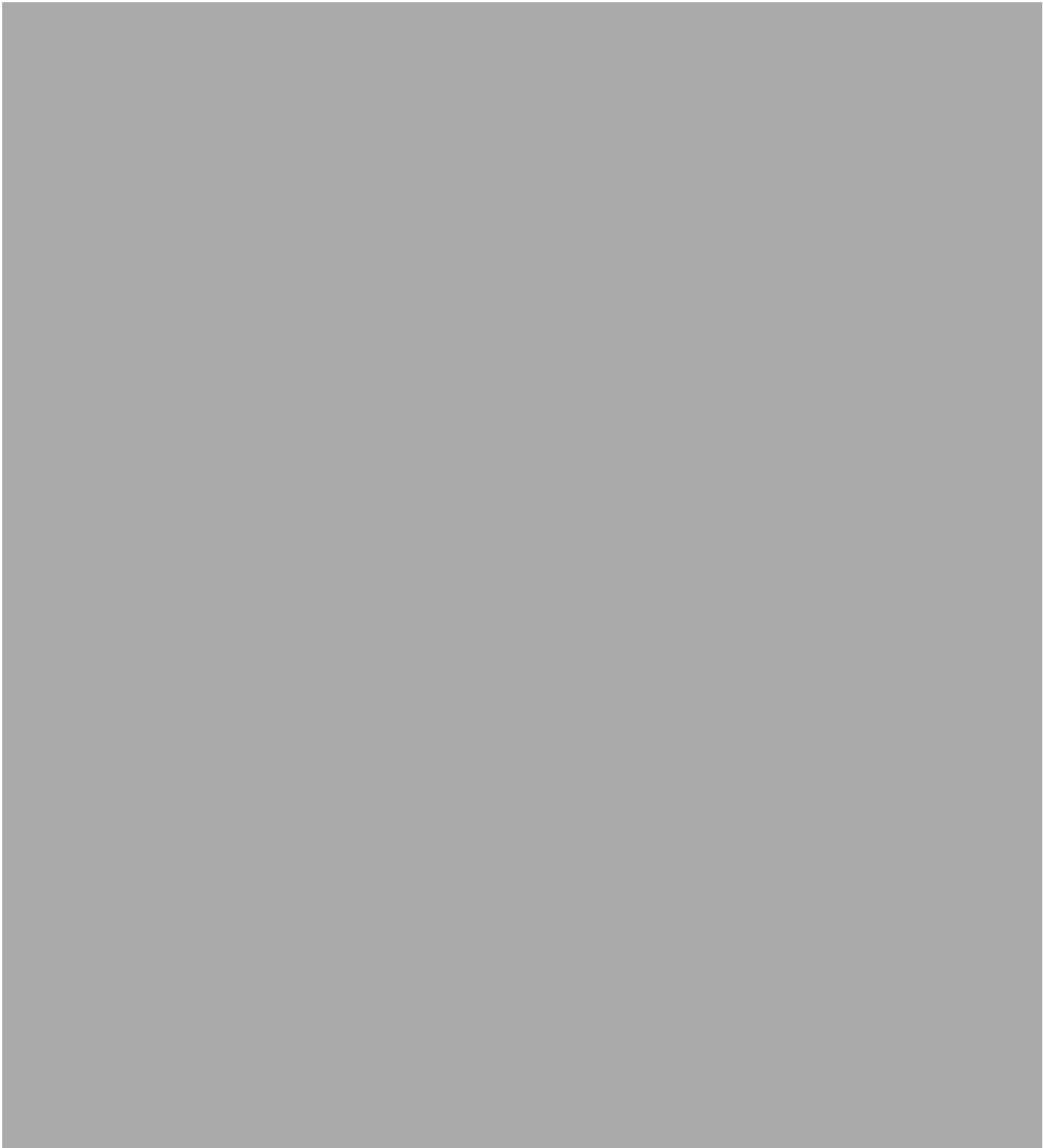


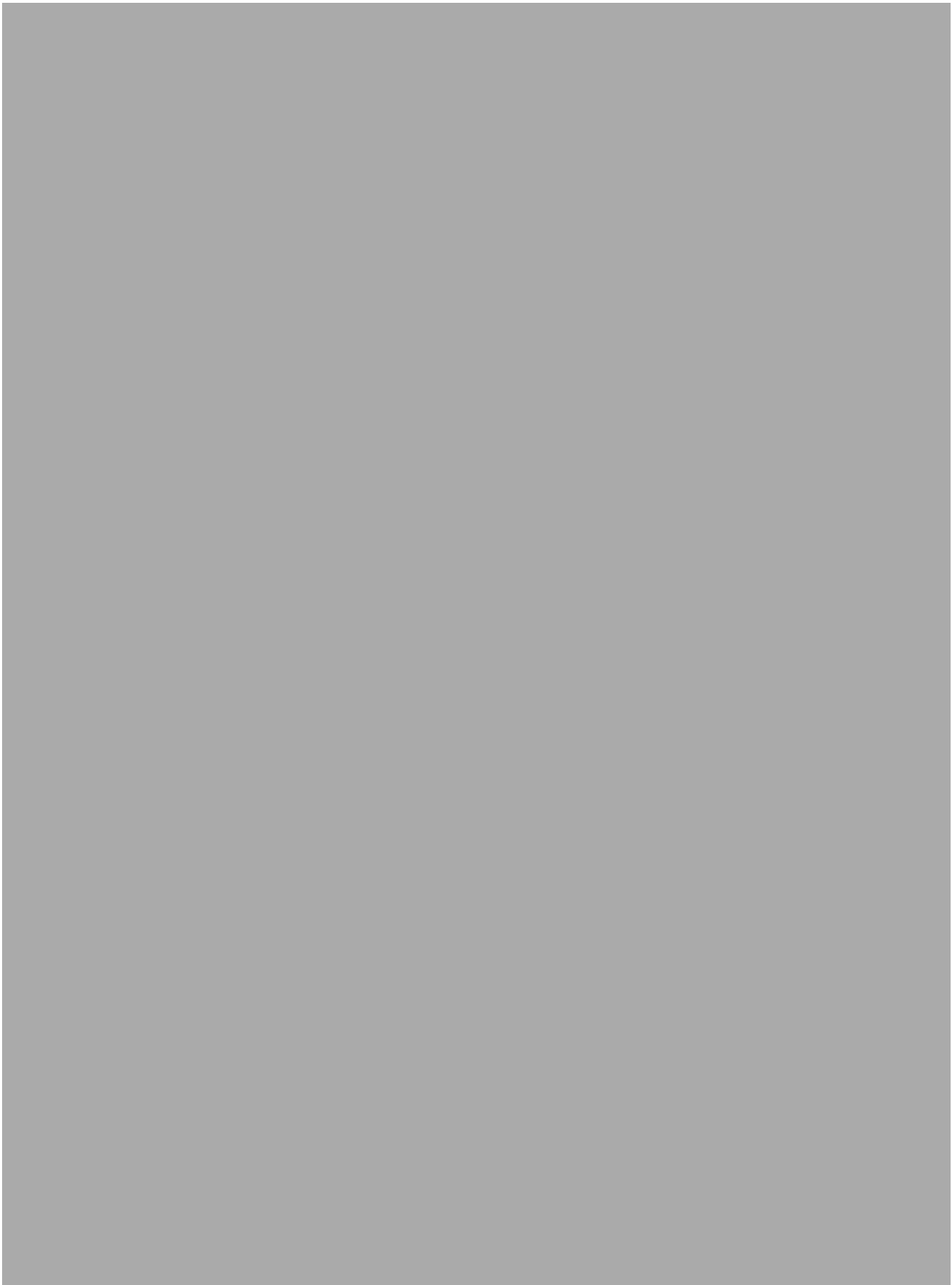














APPENDIX H: ELICITATION INTERVIEW. RECRUITMENT EMAIL

Further to our recent conversation, please find enclosed the text of an email to be sent to potential participants for the research study on Care Rounds. As a reminder please send this out to all of the Nurses and Health Care Support Workers who work in the identified areas in the Trust.

Dear Colleagues,

My name is Ben Appleby. I am a PhD student at University of Birmingham in the Nursing and Physiotherapy Department, working under the supervision of Dr Carolyn Roskell and Dr Bill Daly. I am also a registered nurse, and nurse lecturer working at Birmingham City University. My dissertation research is investigating Nurses and Health Care Support Workers intentions as it relates to completing Care Round Checklists as part of patient care.

We know that clinical guidelines are used as a means for promoting the use of evidence in clinical practice, with the expectation that standardising care through guidelines will improve quality of care provision (Eccles *et al*, 2005). However, there are many human (internal) and external barriers that prevent the use of guidelines (Champion and Leach, 1989; Hannes and Vandersmissen, 2007; Bonner, 2008; Chau *et el*, 2008). To this end, the overall aim of this research is to evaluate how and what influences your decision to complete the care round checklist as directed by the Trust.

The goal of this part of the study is to gather information to develop the questionnaire items that will be used in a future Trust-wide survey. This email is to determine your interest in participating in the study. If you decided to participate in the study, you would be asked to participate in a 20-40 minute one-to-one structured interview. Please see the consent form attached to this email for more specific details of the study.

If you are interested in hearing more about this study or have any questions, contact me directly, either by email, [REDACTED] or by telephone at [REDACTED]

Thank you for your time and I look forward to hearing from you.

APPENDIX I: ELICITATION INTERVIEW. INFORMATION AND CONSENT FORM

Study Title: Exploring Nurses and Health Care Support Workers intentions to implement care rounds: Questionnaire Item Development

Principal Investigator: Ben Appleby RN, MSc, PhD Candidate, Registered Nurse Lecturer, Birmingham City University, Birmingham, UK

Co-investigators: Carolyn Roskell, PhD, Lecturer of Physiotherapy, University of Birmingham, Bill Daly, PhD, Senior Nursing Lecturer, University of Birmingham, Birmingham.

Introduction

You are being invited to take part in the research study named above. This form provides information about the study. Before you decide if you want to take part, it is important that you understand the purpose of the study, the risks and benefits and what you will be asked to do. You do not have to take part in this study. Taking part is entirely voluntary (your choice). Informed consent starts with the initial contact about the study and continues until the end of the study. The principal investigator will be available to answer any questions you have. You may decide not to take part or you may withdraw from the study at any time. This will not affect your position as a [REDACTED] employee in any way.

Why are the researchers doing the study?

Clinical Guidelines are designed as a means to improving and standardising the delivery of care. However, there are many human (internal) and external barriers that prevent the use of guidelines (Champion and Leach, 1989; Hannes and Vandersmissen, 2007; Bonner, 2008; Chau *et al*, 2008). To this end, the overall aim of this research is to use theories of behaviour change to better understand how and why Nurses and Health Care Support Workers respond differently in using guidelines. This study is a series of studies investigating Nurses and Health Care Workers behaviour related to the implementation of care rounds. The goal of the current study is to develop questionnaire items for use in a wider Trust-wide survey at a later date. Interviews will take place at University Hospital Birmingham in the Education Centre, to get an understanding of what you believe are some of the advantages and disadvantages of implementing care rounds.

How will the researchers do the study?

You will be asked to participate in a 20-40 minute one-to-one structured interview. In total, approximately 30 participants will be enrolled in this study at University Hospital Birmingham. Once all the interviews are complete, the researchers will analyze the transcripts of the interviews. No names will be included in transcripts.

What will I be asked to do?

You will be asked to participate in a 20-40 minute one-to-one structured interview with the primary investigator of open-ended questions regarding your opinions and beliefs about the use care rounds. Interviews will be audio taped for transcription purposes.

What are the burdens, harms, and potential harms?

There are no known risks to participating in this study. The interview will cause you to reflect on your clinical practice and will cover potentially sensitive information for you. This could cause some emotional discomfort. If so, you may stop participating in the interview at any time.

What are the possible benefits?

Taking part in this study may be of no help to you personally. However, the interview will cause you to reflect on your clinical practice which some individuals may find helpful.

What alternatives to participation do I have?

This is a voluntary interview to collect information for future studies; there are no alternatives to the study.

Can I withdraw from the study?

Participation in the study is entirely voluntary (your choice). You may decide not to sign the consent form or you may withdraw from the study at any time. This will not affect your employment at the [REDACTED] in any way. If you decide to withdraw, you may request that your data be removed from the study.

Will the study cost me anything and, if so, how will I be reimbursed?

Participation in this study will not result in any expenses to you.

Are there any conflicts of interest?

There are no conflicts of interest on the part of the researchers and/or the institutions.

How will I be informed of study results?

On the signature page (the last page of this form), you may indicate whether or not you would like to receive a summary of the results of this study. If you are interested in receiving the results, they can be sent to you through your Hospital email address. We ask that you provide your emailing address on the signature page for this reason only. Please note that you may not receive results for several months following participation in the one-to-one interview.

How will my privacy be protected?

Any information that is learned about you will be kept private. Only research staff directly involved in this study will have access to your information. The transcripts of the interview will not include any identifying names and simply be labelled as Interviewer or Participant. No identifying information will be available to the data coders and you will not be identified in publication of the results. All study records, recorded material and transcripts will be stored in a locked filing cabinet on the 1st floor in Bevan House, Birmingham City University. The study material will be kept for 5 years after publication of this research as required by University of Birmingham Ethics Board. Records may be shown to the University of Birmingham Research Ethics Board, in the case of an audit.

What if I have study questions or problems?

If you have any questions or concerns following your enrollment, you may directly contact the primary investigator, Ben Appleby. He may be reached by phone: [REDACTED], Monday to Friday between 9am and 5pm or by email: [REDACTED].

What are my Research Rights?

If you become ill or injured as a direct result of participating in this study, necessary medical treatment will be available at no additional cost to you. Your signature on this form only indicates that you have understood to your satisfaction the information regarding your participation in the study and agree to participate as a subject. In no way does this waive your legal rights nor release the investigator, the research doctor, the study sponsor or involved institutions from their legal and professional responsibilities. If you have any questions at any time during or after the study about research in general you may contact the Post Graduate School Office at University of Birmingham [redacted], Monday to Friday between 9am and 5pm.

PARTICIPANT CONSENT

I have read or had read to me this information and consent form and have had the chance to ask questions which have been answered to my satisfaction before signing my name I understand that I have the right to withdraw from the study at any time without affecting my care in any way. I have received a copy of the Information and Consent Form for future reference. I freely agree to participate in this research study.

Name: (Print) _____

Participant Signature: _____

Date: _____ Time: _____

Would you like to receive a copy of a summary of the research findings once the study is completed?

Yes _____ No

(Participant Initials)

If yes, please provide your emailing address:

Do you agree to be contacted for future studies by the Chief Investigator: Ben Appleby?

Yes _____ No

(Participant Initials)

To be completed by study staff:

STATEMENT BY PERSON PROVIDING INFORMATION ON STUDY

I have explained the nature and demands of the research study and judge that the participant named above understands the nature and demands of the study.

Name: (Print) _____

Signature: _____ Position: _____

Date: _____ Time: _____

STATEMENT BY PERSON OBTAINING CONSENT

I have explained the nature of the consent process to the participant and judge that they understand that participation is voluntary and that they may withdraw at any time from participating.

Name: (Print) _____

Signature: _____ Position: _____

Date: _____ Time: _____

APPENDIX J: INTERVIEW SCHEDULE

Measuring reasoned behavioural beliefs

1. What do you believe are the **advantages** of completing hourly to two- hourly care round checklists?
2. What do you believe are the **disadvantages** of completing hourly to two- hourly care round checklists?

Measuring emotive behavioural beliefs

3. How do you feel about using the care round checklist?

Open ended question, to establish if views are reasoned or emotive

4. Is there anything else you associate **with your views** about completing hourly to two- hourly care round checklists?

Measuring reasoned normative beliefs

1. Are there any individual or groups who would **approve** of you completing hourly to two- hourly care round checklists
2. Are there any individual or groups who would **disapprove** of you completing hourly to two- hourly care round checklists?

Measuring emotive behavioural beliefs

3. How do colleagues affect the way you feel about completing the Care Round Checklist?

Open ended question, to establish if views are reasoned or emotive

4. Is there anything else you associate with **other people's views** about completing hourly to two- hourly care round checklists?

Measuring reasoned control beliefs

1. What **factors or circumstances** would enable you to successfully complete hourly to two- hourly care round checklists?
2. What **factors or circumstances** would make it difficult or impossible to successfully complete a hourly to two- hourly care round checklist?

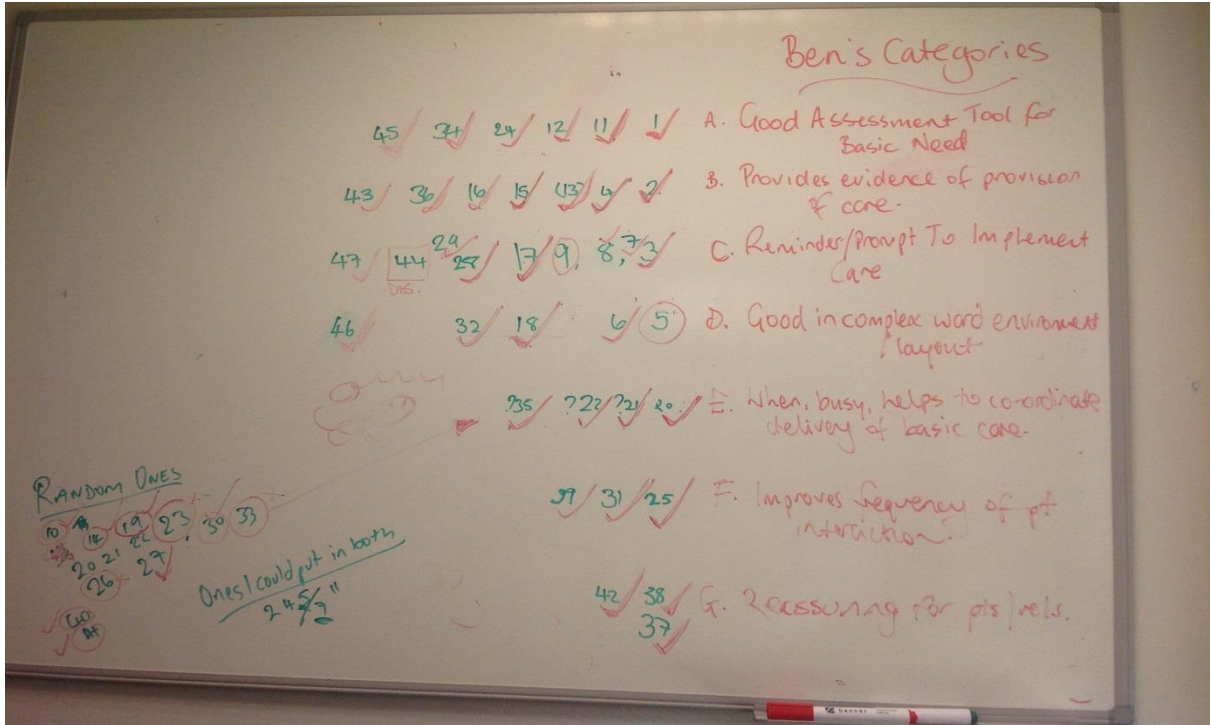
Measuring emotive behavioural beliefs

3. How does the clinical environment affect the way you feel about completing the care round checklist?

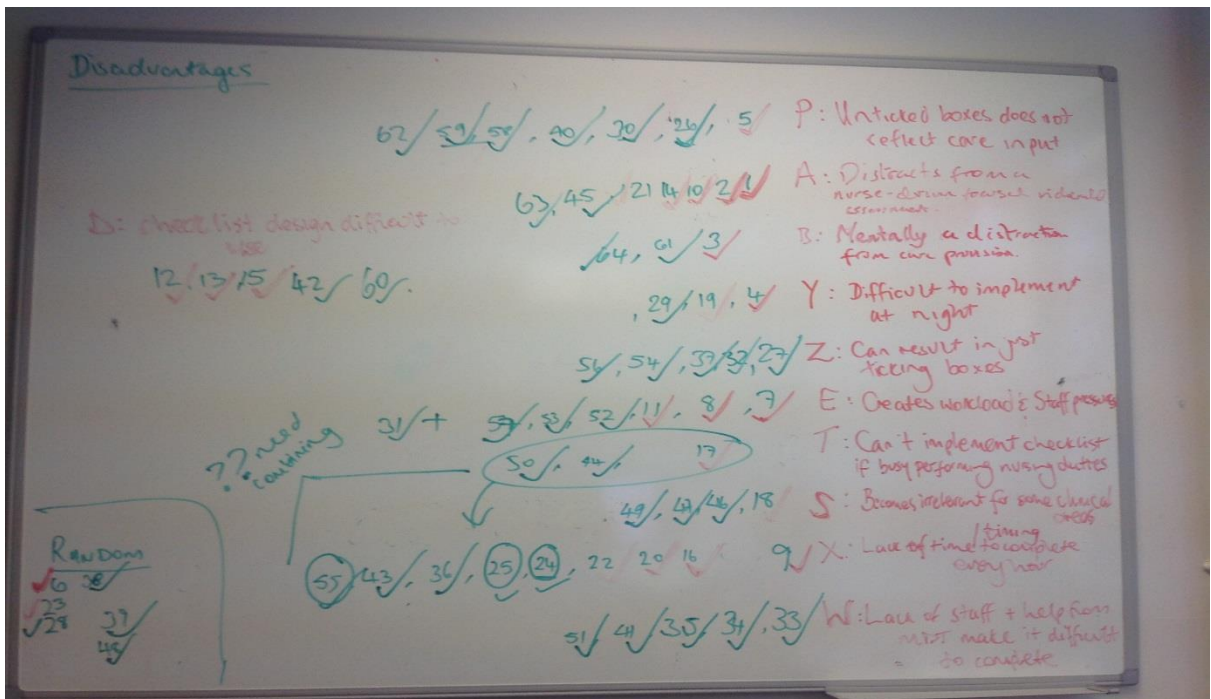
Open ended question, to establish if views are reasoned or emotive

4. Are there any other issues that come to mind when you think about completing hourly to two- hourly care round checklists?

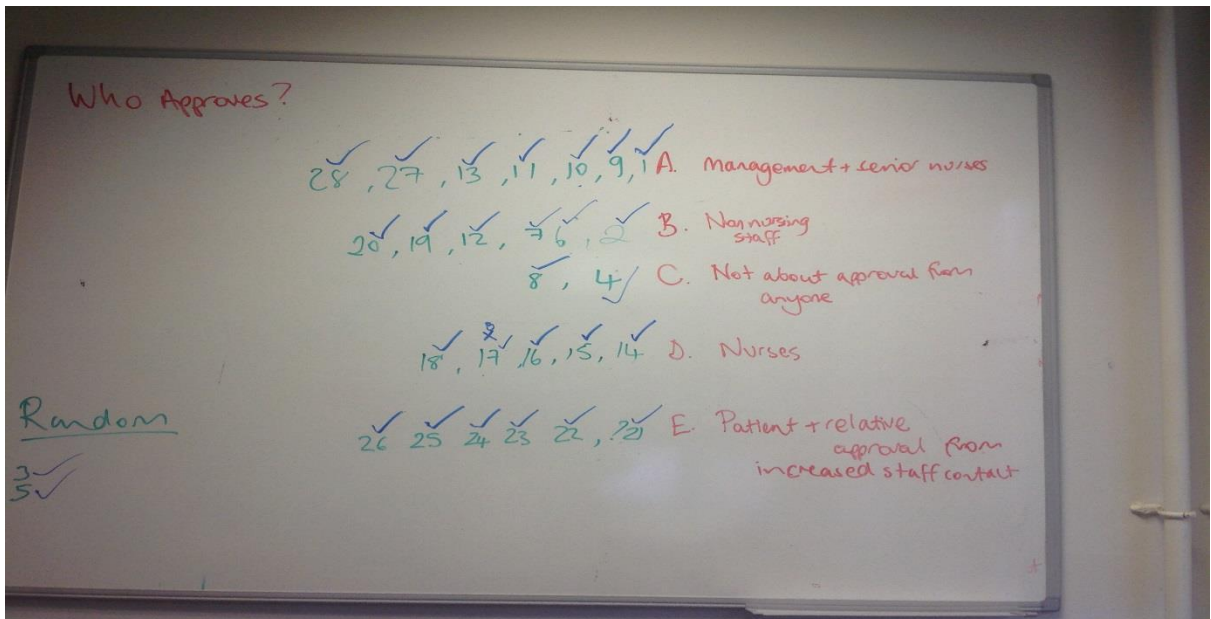
APPENDIX K: METHODOLOGY. CONDENSING MEANING UNITS 'ADVANTAGES'



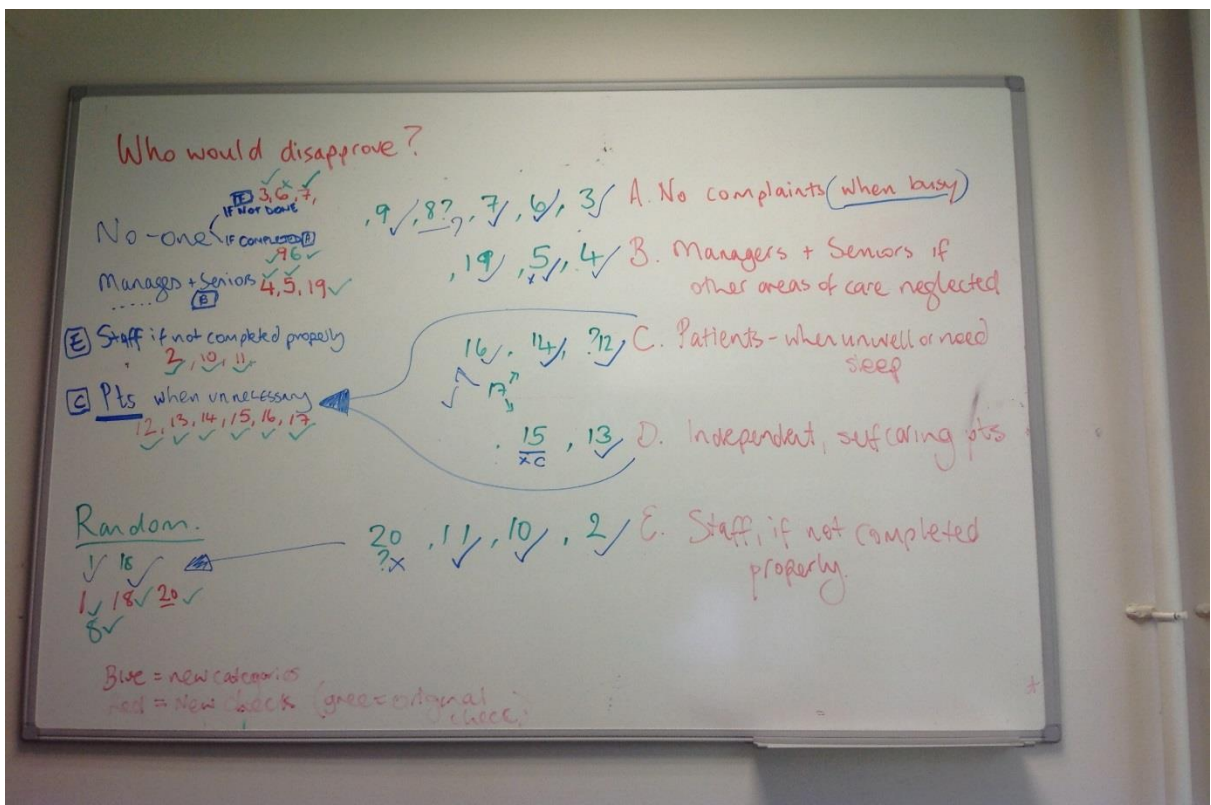
APPENDIX L: METHODOLOGY. CONDENSING MEANING UNITS 'DISADVANTAGES'



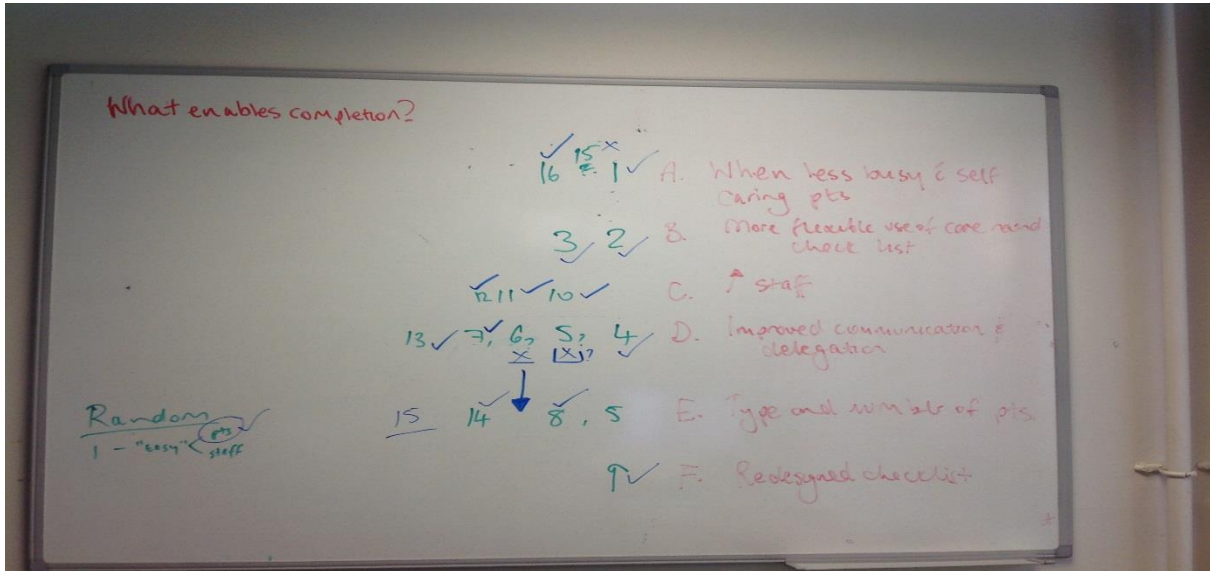
APPENDIX M: METHODOLOGY. CONDENSING MEANING UNITS 'WHO APPROVES'



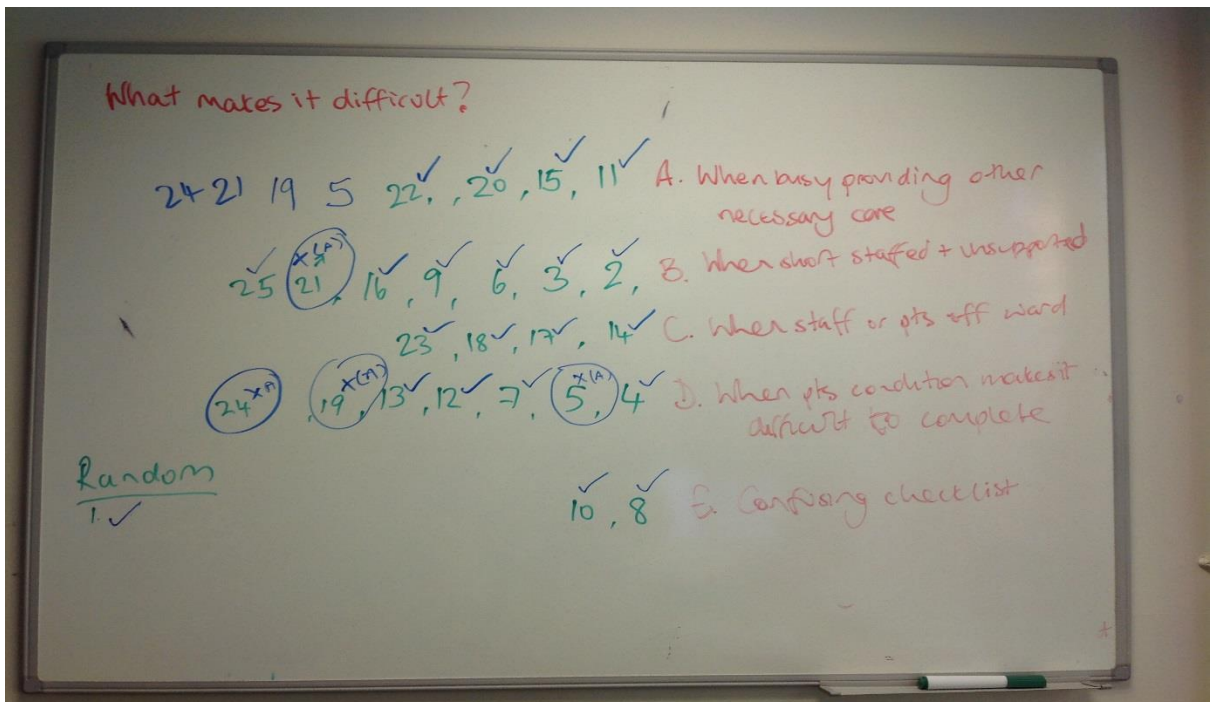
APPENDIX N: METHODOLOGY. CONDENSING MEANING UNITS 'WHO DISAPPROVES'



APPENDIX O: CONDENSING MEANING UNITS 'FACTORS ENABLING COMPLETION'



APPENDIX P: CONDENSING MEANING UNITS 'FACTORS WHICH MAKE IT DIFFICULT'



**APPENDIX Q: BEHAVIOURAL, NORMATIVE and CONTROL BELIEF-BASED QUESTIONNAIRE
ITEMS**

Behavioural Belief Questions

1. When I use the care round checklist it helps to provide evidence of care provision

strongly	moderately	weakly	weakly	moderately	strongly
disagree	disagree	disagree	agree	agree	agree

2. When I use the care round checklist it acts as a reminder or prompt to implement the care round

strongly	moderately	weakly	weakly	moderately	strongly
disagree	disagree	disagree	agree	agree	agree

3. There is a lack of time to complete the care round checklist every hour

strongly	moderately	weakly	weakly	moderately	strongly
disagree	disagree	disagree	agree	agree	agree

4. When I am busy, using the checklist helps me to coordinate basic care

strongly	moderately	weakly	weakly	moderately	strongly
disagree	disagree	disagree	agree	agree	agree

5. I think the checklist is viewed as a good assessment tool for assessing basic needs

strongly	moderately	weakly	weakly	moderately	strongly
disagree	disagree	disagree	agree	agree	agree

6. In complex ward environments the checklist helps me re-focus to my patients needs

strongly	moderately	weakly	weakly	moderately	strongly
disagree	disagree	disagree	agree	agree	agree

7. Implementing hourly care rounds using the checklist creates too much workload and stress

strongly	moderately	weakly	weakly	moderately	strongly
disagree	disagree	disagree	agree	agree	agree

8. Using the care round checklist helps to promote patient contact

strongly	moderately	weakly	weakly	moderately	strongly
disagree	disagree	disagree	agree	agree	agree

9. Hourly care round checks can distract from me providing an individualised patient assessment

strongly	moderately	weakly	weakly	moderately	strongly
disagree	disagree	disagree	agree	agree	agree

10. Hourly care round checks help to promote patient communication

strongly	moderately	weakly	weakly	moderately	strongly
disagree	disagree	disagree	agree	agree	agree

11. If I do not tick the checklist every hour this does not necessarily reflect actual care input

strongly disagree	moderately disagree	weakly disagree	weakly agree	moderately agree	strongly agree
-------------------	---------------------	-----------------	--------------	------------------	----------------

12. For some staff, the completion of hourly care round checks can result in just ticking boxes

strongly disagree	moderately disagree	weakly disagree	weakly agree	moderately agree	strongly agree
-------------------	---------------------	-----------------	--------------	------------------	----------------

13. More support from multi-disciplinary and medical staff would help to successfully implement the care round checklist hourly

strongly disagree	moderately disagree	weakly disagree	weakly agree	moderately agree	strongly agree
-------------------	---------------------	-----------------	--------------	------------------	----------------

14. Improving the care round checklist design would help to assess patients' needs

strongly disagree	moderately disagree	weakly disagree	weakly agree	moderately agree	strongly agree
-------------------	---------------------	-----------------	--------------	------------------	----------------

15. Completing the hourly care round checklist can be an annoying and frustrating task

strongly disagree	moderately disagree	weakly disagree	weakly agree	moderately agree	strongly agree
-------------------	---------------------	-----------------	--------------	------------------	----------------

Normative Belief Questions

1. Completing the hourly care round check list as recommended by clinical senior staff is important to me

strongly disagree	moderately disagree	weakly disagree	weakly agree	moderately agree	strongly agree
-------------------	---------------------	-----------------	--------------	------------------	----------------

2. When I implement the care round checklist this sets a standard for other members of the Multi-Disciplinary Team who could complete parts of the checklist

strongly disagree	moderately disagree	weakly disagree	weakly agree	moderately agree	strongly agree
-------------------	---------------------	-----------------	--------------	------------------	----------------

3. My patient's relatives or family appreciate my completion of hourly care round checks

strongly disagree	moderately disagree	weakly disagree	weakly agree	moderately agree	strongly agree
-------------------	---------------------	-----------------	--------------	------------------	----------------

4. When I complete the hourly care round checklist this is appreciated by my colleagues

strongly disagree	moderately disagree	weakly disagree	weakly agree	moderately agree	strongly agree
-------------------	---------------------	-----------------	--------------	------------------	----------------

5. Clinical senior staff raise concerns if hourly care round checks get in the way of providing other essential care

strongly moderately weakly weakly moderately strongly
disagree disagree disagree agree agree agree

6. Implementing care round checklists in the same way as my colleagues matters to me

strongly moderately weakly weakly moderately strongly
disagree disagree disagree agree agree agree

7. If patients feel that care rounds are unnecessary this matters to how I complete the round

strongly moderately weakly weakly moderately strongly
disagree disagree disagree agree agree agree

8. I should complete care round checklists in the same way as my colleagues

strongly moderately weakly weakly moderately strongly
disagree disagree disagree agree agree agree

9. Having staff approval to how I complete the checklist is important to me

strongly moderately weakly weakly moderately strongly
disagree disagree disagree agree agree agree

10. Staff's lack of interest in the completion of care rounds affects how I complete my rounds

strongly moderately weakly weakly moderately strongly
disagree disagree disagree agree agree agree

11. Patient's generally approve of when I implement hourly care round checks using the checklist

strongly moderately weakly weakly moderately strongly
disagree disagree disagree agree agree agree

Control Belief Questions

1. Having a full complement of staff helps me to complete hourly care round checks

strongly moderately weakly weakly moderately strongly
disagree disagree disagree agree agree agree

2. Effective communication helps to ensure hourly checklists are completed for all patients

strongly moderately weakly weakly moderately strongly
disagree disagree disagree agree agree agree

3. Effective delegation ensures patients receive hourly care round checks

strongly moderately weakly weakly moderately strongly
disagree disagree disagree agree agree agree

4. The number of patients I care for on a shift has a direct effect on hourly completion of the checklist

strongly moderately weakly weakly moderately strongly

disagree disagree disagree agree agree agree

5. The patient's condition has a significant impact on my ability to complete all my patients' hourly care round checklists

strongly moderately weakly weakly moderately strongly
disagree disagree disagree agree agree agree

6. When my patients are off the ward this effects my ability to complete their hourly care round checklist

strongly moderately weakly weakly moderately strongly
disagree disagree disagree agree agree agree

7. Completing hourly care round checklists for all my patients' is very difficult in ward environments which are complex

strongly moderately weakly weakly moderately strongly
disagree disagree disagree agree agree agree

8. When I am having to spend extensive time caring for one of my patient's, it is very difficult to get round to all my patients every hour

strongly moderately weakly weakly moderately strongly
disagree disagree disagree agree agree agree

9. Completing my care rounds at night is easier than on a day-time shift

strongly moderately weakly weakly moderately strongly
disagree disagree disagree agree agree agree

APPENDIX R: MEASURING INTENTION FOR EACH BEHAVIOUR

A: All elements of the checklist are completed

The care round (guided by the checklist) is completed every hour when possible with the full co-operation of the patient

I expect to complete all elements of the checklist and implement the care round with the patient on an hourly basis
Strongly agree 1 2 3 4 5 6 Strongly disagree
I want to complete all elements of the checklist and implement the care round with the patient on an hourly basis
Definitely True 1 2 3 4 5 6 Definitely False
I intend to complete all elements of the checklist and implement the care round with the patient on an hourly basis
Unlikely 1 2 3 4 5 6 Likely

B: Only essential elements of the checklist are completed

The care round (guided by the checklist) is completed every hour with or without the co-operation of the patient.

I expect to complete only essential elements of the checklist and implement the care round on an hourly basis with or without the co-operation of the patient
Strongly agree 1 2 3 4 5 6 Strongly disagree
I want to complete only essential elements of the checklist and implement the care round on an hourly basis with or without the co-operation of the patient
Definitely True 1 2 3 4 5 6 Definitely False
I intend to complete only essential elements of the checklist and implement the care round on an hourly basis with or without the co-operation of the patient
Unlikely 1 2 3 4 5 6 Likely

APPENDIX S: MEASURING ATTITUDE, SUBJECTIVE NORM AND PBC

Measuring Attitude

1. Completing all elements of the care round checklist every hour with full co-operation of the patient is

Necessary	1 2 3 4 5 6	Unnecessary
Good	1 2 3 4 5 6	Bad
Important (for me)	1 2 3 4 5 6	Unimportant (to me)
Useless	1 2 3 4 5 6	Useful
Convenient	1 2 3 4 5 6	Unconvenient

2. Completing only essential elements of the care round checklist with or without the full co-operation of the patient is

Necessary	1 2 3 4 5 6	Unnecessary
Good	1 2 3 4 5 6	Bad
Important (for me)	1 2 3 4 5 6	Unimportant (to me)
Useles	1 2 3 4 5 6	Useful
Convenient	1 2 3 4 5 6	Unconvenient

Measuring Subjective Norm

1. Most people who I work with that are important to me think I should implement the care round checklist

strongly disagree	moderately disagree	weakly disagree	weakly agree	moderately agree	strongly agree
-------------------	---------------------	-----------------	--------------	------------------	----------------

2. It is expected of me that I implement hourly care rounds using the checklist

strongly disagree	moderately disagree	weakly disagree	weakly agree	moderately agree	strongly agree
-------------------	---------------------	-----------------	--------------	------------------	----------------

3. I feel under peer pressure to implement hourly care rounds using the checklist

strongly disagree	moderately disagree	weakly disagree	weakly agree	moderately agree	strongly agree
-------------------	---------------------	-----------------	--------------	------------------	----------------

4. Colleagues who are important to me want me to implement care rounds using the checklist

strongly disagree	moderately disagree	weakly disagree	weakly agree	moderately agree	strongly agree
-------------------	---------------------	-----------------	--------------	------------------	----------------

Measuring Perceived Behavioural Control

1. I am confident that for most of my patient's I can implement all elements of the care round checklist every hour with the full co-operation of my patient

strongly	moderately	weakly	weakly	moderately	strongly
disagree	disagree	disagree	agree	agree	agree

2. I am confident that for most of my patient's I can implement the essential elements of the checklist every hour with or without the full co-operation of the patient

strongly	moderately	weakly	weakly	moderately	strongly
disagree	disagree	disagree	agree	agree	agree

3. Completing all elements of the checklist with the full co-operation of the patient is easy

strongly	moderately	weakly	weakly	moderately	strongly
disagree	disagree	disagree	agree	agree	agree

4. Completing only essential elements of the checklist with or without the full co-operation of the patient is easy

strongly	moderately	weakly	weakly	moderately	strongly
disagree	disagree	disagree	agree	agree	agree

5. The decision to complete hourly care round checklists is beyond my control

strongly	moderately	weakly	weakly	moderately	strongly
disagree	disagree	disagree	agree	agree	agree

6. Whether I implement all or only essential elements of the checklist with or without the patient is entirely up to me

strongly	moderately	weakly	weakly	moderately	strongly
disagree	disagree	disagree	agree	agree	agree

APPENDIX T: MEASURING HABIT

Measuring Habit

1. When I implement care rounds using the checklist I do this automatically

strongly	moderately	weakly	weakly	moderately	strongly
disagree	disagree	disagree	agree	agree	agree

2. When I implement care rounds using the checklist I do this without having to consciously remember

strongly	moderately	weakly	weakly	moderately	strongly
disagree	disagree	disagree	agree	agree	agree

3. Implementing care rounds checks using the checklist is something that belongs to my hourly routine

strongly	moderately	weakly	weakly	moderately	strongly
disagree	disagree	disagree	agree	agree	agree

4. Implementing care rounds using the checklist is something I start doing before I realise I am doing it

strongly	moderately	weakly	weakly	moderately	strongly
disagree	disagree	disagree	agree	agree	agree

5. Implementing care rounds using the checklist is something I do without thinking

strongly	moderately	weakly	weakly	moderately	strongly
disagree	disagree	disagree	agree	agree	agree

6. Implementing care rounds using the checklist is something I would find hard not to do

strongly	moderately	weakly	weakly	moderately	strongly
disagree	disagree	disagree	agree	agree	agree

7. When implementing care rounds using the checklist I have no need to think about what I am doing

strongly	moderately	weakly	weakly	moderately	strongly
disagree	disagree	disagree	agree	agree	agree

APPENDIX U: MEASURING CONTEXT

Measuring Context

1. The majority of patients I currently care for are self-caring
strongly moderately weakly weakly moderately strongly
disagree disagree disagree agree agree agree

 2. I often look after patients that are disorientated or confused

strongly moderately weakly weakly moderately strongly
disagree disagree disagree agree agree agree

 3. I often provide care for individual patients for over an hour at a time
strongly moderately weakly weakly moderately strongly
disagree disagree disagree agree agree agree

 4. My patients are generally willing to engage in the completion of the checklist
strongly moderately weakly weakly moderately strongly
disagree disagree disagree agree agree agree

 5. My patients are often acutely unwell and require some assistance from care staff
strongly moderately weakly weakly moderately strongly
disagree disagree disagree agree agree agree

 6. Most of my patients are unconscious and are totally dependent on care staff
strongly moderately weakly weakly moderately strongly
disagree disagree disagree agree agree agree
-

APPENDIX V: DEMOGRAPHIC QUESTIONS

Demographic Questions

Q1.	Are you? <ul style="list-style-type: none"> • Male • Female 										
Q2.	What is your age range? <ul style="list-style-type: none"> • 17-20 years old • 21-25 years old • 26-35 years old • 36-45 years old • 46-55 years old • 56-65 years old 										
Q3.	What are you employed as? <table border="0" style="width: 100%; margin-left: 40px;"> <tr> <td style="text-align: center;">HCA/Auxiliary</td> <td style="text-align: center;">Registered Nurse</td> </tr> <tr> <td style="text-align: center;">Band 3</td> <td style="text-align: center;">Band 5</td> </tr> <tr> <td style="text-align: center;">Band 4</td> <td style="text-align: center;">Band 6</td> </tr> <tr> <td></td> <td style="text-align: center;">Band 7</td> </tr> <tr> <td></td> <td style="text-align: center;">Band 8</td> </tr> </table>	HCA/Auxiliary	Registered Nurse	Band 3	Band 5	Band 4	Band 6		Band 7		Band 8
HCA/Auxiliary	Registered Nurse										
Band 3	Band 5										
Band 4	Band 6										
	Band 7										
	Band 8										
Q4.	Which hospital floor do you work on? <table border="0" style="width: 100%; margin-left: 40px;"> <tr> <td style="vertical-align: top;"> <ul style="list-style-type: none"> • Floor 2 • Floor 3 • Floor 4 </td> <td style="vertical-align: top; padding-left: 20px;"> <ul style="list-style-type: none"> • Floor 5 • Floor 6 </td> </tr> </table>	<ul style="list-style-type: none"> • Floor 2 • Floor 3 • Floor 4 	<ul style="list-style-type: none"> • Floor 5 • Floor 6 								
<ul style="list-style-type: none"> • Floor 2 • Floor 3 • Floor 4 	<ul style="list-style-type: none"> • Floor 5 • Floor 6 										
Q5.	In which clinical area do you work? Please write this down below: The clinical area I work in is										

APPENDIX W: COVERING LETTER ASKING RESPONDERS TO COMMENT ON THE QUESTIONNAIRE

Ben Appleby
Doctoral Student
University of Bham,
[REDACTED]

12th November 2014

Dear Colleagues,

Re: PILOT STUDY Care Round Questionnaire

My name is Ben Appleby. I am a PhD student at University of Birmingham, working under the supervision of Dr Carolyn Roskell and Dr William Daly. I am also a registered nurse and nurse lecturer working at Birmingham City University.

Some of you will recall that in December of last year I interviewed some of you asking questions about care rounds, and how you used the care round checklist. This information has now been collated and integrated into the questionnaire.

I am now in the process of checking the questionnaire before the final version is distributed across several floors in the hospital. For the Pilot Study it would be much appreciated if you could complete the questionnaire and provide some feedback. There are 2 copies of the questionnaire in each envelope. Can you please complete the same questionnaire twice, with a gap of at least a week between the first and second questionnaire. After you have completed the questionnaire for the second time can you please provide some answers to the following:

- Are any questions difficult to answer?
- Does the questionnaire feel too repetitive?
- Does it feel too long?
- Does it represent your thoughts on completion of care rounds using the checklist?

The questionnaire should take around 10 minutes to complete. Please return the completed questionnaires in the sealed envelope into the box in your Sisters/Charge Nurses office. Questionnaires will be collected on **Monday 24th November 2014**.

Thank you in advance for your time and interest. If you have any questions or concerns, please contact me, Ben Appleby, at the number listed below. By completing the questionnaire it is believed you have been happy to take part and consented to offering your own views.

Yours sincerely,

Ben Appleby [REDACTED]

Please turn over...

Please write your thoughts on the questionnaire in the boxes below

Questionnaire Feedback

Are any questions difficult to answer?

Does the questionnaire feel too repetitive?

Does it feel too long?

Does it represent your thoughts on completion of care rounds using the checklist?

Any other comments?



University of Birmingham

Appendix X **QUESTIONNAIRE (DRAFT)**

Factors influencing the implementation of CARE ROUNDS

October 2014

As part of new research within the University of Birmingham, we are interested in learning more about how you implement care rounds using the care round checklist. In particular we are interested in what may influence your perceptions of using the care round checklist as part of your care delivery. Therefore we are asking for your assistance in completing the following questionnaire.

Please read the following instructions before answering the questions

- For the purpose of this study please think about your individual views on how **you complete care rounds** with the aid of the care round checklist
- Please tick the box which best represents your answer. There are no correct or incorrect answers. We are interested in your use and perceptions of implementing care rounds, not what you think you should answer.
- Your answers will remain strictly confidential. Results of the study may be published in a health related journal, but no information that may lead to the identification of any individual will be released.
- The questionnaire should take approximately 15 minutes to complete.
- Please either complete and submit the questionnaire online, or return the paper copy in the envelope provided (where to?)
- If you have any queries with the questionnaire, please contact:

Dr Carolyn Roskell (*Study Co-ordinator*) on [REDACTED]

Ben Appleby (*Doctoral Researcher*) on [REDACTED]

EXAMPLE

How to fill in this questionnaire

Please circle the place on the following scales that best represent your response to each question

For example, if you think care rounds are very good at promoting patient interaction, you would respond like this:

Strongly agree 1 2 3 4 5 6 7 Strongly disagree

Or if you had strong views that care rounds do not necessarily promote patient interaction, you would respond like this:

Strongly agree 1 2 3 4 5 6 7 Strongly disagree

Alternatively, if you only had moderately strong views of care rounds to promote patient interaction, you would respond like this.

Strongly agree 1 2 3 4 5 6 7 Strongly disagree

Alternatively, if you did not feel strongly either way about the capacity of care rounds to promote patient interaction, you would respond like this:

Strongly agree 1 2 3 4 5 6 7 Strongly disagree

Some responses will require you to make positive or negative evaluations. For example, if you feel that care rounds are positive you would indicate:

Extremely undesirable -3 -2 -1 0 +1 +2 +3 Extremely desirable

SECTION 1
Your details

Please circle the relevant category

Q1.	Are you? <ul style="list-style-type: none"> • Male • Female 		
Q2.	What is your Age Range? <ul style="list-style-type: none"> • 17-20 years old • 21-25 years old • 26-35 years old • 36-45 years old • 46-55 years old • 56-65 years old 		
Q3.	What are you employed as? <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top;">HCA/Auxiliary Band 3 Band 4</td> <td style="width: 50%; vertical-align: top;">Registered Nurse Band 5 Band 6 Band 7 Band 8</td> </tr> </table>	HCA/Auxiliary Band 3 Band 4	Registered Nurse Band 5 Band 6 Band 7 Band 8
HCA/Auxiliary Band 3 Band 4	Registered Nurse Band 5 Band 6 Band 7 Band 8		
Q4.	Which Hospital Floor do you work on? <ul style="list-style-type: none"> • Ground Level • Level 1 • Level 2 • Level 3 • Level 4 • Level 5 • Level 6 		
Q5.	In which clinical area do you work? Please write this down below: <p>The clinical area I work in is</p>		

SECTION 2: Your care round activity

Select and circle your answers on this page to **only one Care Round Activity**:

Select the activity which best reflects your day to day practice:

Care Round Activity 1

The care round (guided by the checklist) is **FULLY IMPLEMENTED** every hour **with the patient** on an hourly basis, as the organisation intended, and clearly contributes towards a full evaluation and implementation of care needs.

Given this...

I expect to fully implement the care round with the patient on an hourly basis
Strongly agree 1 2 3 4 5 6 7 Strongly disagree
I want to fully implement the care round with the patient on an hourly basis
Definitely True 1 2 3 4 5 6 7 Definitely False
I intend to fully implement the care round with the patient on an hourly basis
Unlikely 1 2 3 4 5 6 7 Likely

Care Round Activity 2

The care round (guided by the checklist) is **PARTIALLY IMPLEMENTED** every hour **with or without the patient** on an hourly basis, not necessarily as the organisation intended, and generally contributes towards a limited evaluation and implementation of care.

Given this....

I expect to partially implement the care round on an hourly basis
Strongly agree 1 2 3 4 5 6 7 Strongly disagree
I want to partially implement the care round on an hourly basis
Definitely True 1 2 3 4 5 6 7 Definitely False
I intend to partially implement the care round on an hourly basis
Unlikely 1 2 3 4 5 6 7 Likely

SECTION 3: Your attitudes and beliefs towards care rounds

You are due to implement your hourly care round using the checklist:

Q6. Full implementation of hourly care rounds as the organisation intended are:

Necessary 1 2 3 4 5 6 7 Unnecessary

Good 1 2 3 4 5 6 7 Bad

Important (for me) 1 2 3 4 5 6 7 Unimportant (to me)

Useless 1 2 3 4 5 6 7 Useful

Q7. Partial implementation of hourly care rounds, not necessarily as the organisation intended are:

Necessary 1 2 3 4 5 6 7 Unnecessary

Good 1 2 3 4 5 6 7 Bad

Important (for me) 1 2 3 4 5 6 7 Unimportant (to me)

Useless 1 2 3 4 5 6 7 Useful

<p>8. a, When I complete the care round checklist, it helps provide evidence of care provision</p>	<p>Strongly agree 1 2 3 4 5 6 7 Strongly disagree</p>
<p>b, The care round checklist acts as a reminder or prompt to implement the care round</p>	<p>Strongly agree 1 2 3 4 5 6 7 Strongly disagree</p>
<p>c, When it is busy, using the checklist helps to facilitate the coordination of basic care</p>	<p>Strongly agree 1 2 3 4 5 6 7 Strongly disagree</p>

d, The checklist is seen as a good assessment tool for assessing basic needs	Strongly agree 1 2 3 4 5 6 7 Strongly disagree
e, Using the checklist in complex ward environments helps to direct you to your patients	Strongly agree 1 2 3 4 5 6 7 Strongly disagree
f, Completing the care round helps the frequency of patient interaction	Strongly agree 1 2 3 4 5 6 7 Strongly disagree

Q9. a, There is a lack of time to complete the care round checklist every hour	Strongly agree 1 2 3 4 5 6 7 Strongly disagree
b, Completing hourly care round checks creates too much workload and stress	Strongly agree 1 2 3 4 5 6 7 Strongly disagree
c, Completing hourly care round checks distracts from providing a nurse-driven patient assessment	Strongly agree 1 2 3 4 5 6 7 Strongly disagree
d, Un-ticked care round checklists do not necessarily reflect actual care input	Strongly agree 1 2 3 4 5 6 7 Strongly disagree
e, The completion of hourly care round checks can result in just ticking boxes	Strongly agree 1 2 3 4 5 6 7 Strongly disagree
f, The nursing and care staff need more support from MDT	Strongly agree 1 2 3 4 5 6 7 Strongly disagree
g, The care round checklist design does not help to assess patients' needs	Strongly agree 1 2 3 4 5 6 7 Strongly disagree
	Strongly agree 1 2 3 4 5 6 7 Strongly disagree

<p>h, Generally, care rounds have not been well-received by staff and there are generally indifferent feelings</p>	<p>Strongly agree 1 2 3 4 5 6 7 Strongly disagree</p>
<p>i, Completing hourly care round checks is an annoying and frustrating task, which does not help assess patients' needs</p>	<p>Strongly agree 1 2 3 4 5 6 7 Strongly disagree</p>
<p>j, The care round checklist is very usable and helps to promote patient contact</p>	

<p>Q10. a, Using the care round checklist as a source of evidence of care provision is:</p>	<p>Extremely desirable +3 +2 +1 0 -1 -2 -3 Extremely undesirable</p>
<p>b, Using the care round checklist as a reminder or prompt is:</p>	<p>Extremely undesirable -3 -2 -1 0 +1 +2 +3 Extremely desirable</p>
<p>c, Using the care round checklist to facilitate the coordination of basic care on busy shifts is:</p>	<p>Extremely desirable +3 +2 +1 0 -1 -2 -3 Extremely undesirable</p>
<p>d, Using the care round checklist to assess basic care needs is:</p>	<p>Extremely undesirable -3 -2 -1 0 +1 +2 +3 Extremely desirable</p>
<p>e, Using the care round checklist on complex ward environments to direct you to your patients is:</p>	<p>Extremely desirable +3 +2 +1 0 -1 -2 -3 Extremely undesirable</p>

f, Seeing patients frequently by completing hourly rounds is:	Extremely undesirable -3 -2 -1 0 +1 +2 +3 Extremely desirable
h, Lack of time when completing the care round checklist is:	Extremely desirable +3 +2 +1 0 -1 -2 -3 Extremely undesirable
i, A care round checklist that creates workload and stress is:	Extremely undesirable -3 -2 -1 0 +1 +2 +3 Extremely desirable
j, A care round checklist which distracts from providing a nurse-driven patient assessment is:	Extremely desirable +3 +2 +1 0 -1 -2 -3 Extremely undesirable
k, Providing care but still having unticked care round checklists is:	Extremely undesirable -3 -2 -1 0 +1 +2 +3 Extremely desirable
l, A care round approach which results in just ticking boxes is:	Extremely desirable +3 +2 +1 0 -1 -2 -3 Extremely undesirable
m, A lack of support from MDT in completing care rounds is:	Extremely undesirable -3 -2 -1 0 +1 +2 +3 Extremely desirable
n, Using a not well-designed checklist to assess patients' needs is:	Extremely desirable +3 +2 +1 0 -1 -2 -3 Extremely undesirable
d, Having a care round checklist which is not well-received by staff is:	Extremely undesirable -3 -2 -1 0 +1 +2 +3 Extremely desirable
e, Using a care round checklist which makes you feel annoyed and frustrated in assessing patients' needs is:	Extremely desirable +3 +2 +1 0 -1 -2 -3 Extremely undesirable

f, Using a care round checklist knowing it is very usable and helps you to get in front of your patients' is:

Extremely undesirable -3 -2 -1 0 +1 +2 +3 Extremely desirable

SECTION 3

Perceptions of completing care rounds in your organisation

Those people that work with you in the organisation will hold different views on how to use the care round checklist. **Full implementation** refers to how the organisation instructed you to use the checklist. **Partial implementation** refers to how you and your colleagues implement the checklist, which may not necessarily comply with 'full implementation' as recommended by the organisation.

When you complete this section where indicated **can you circle either** fully **or** partially and also indicate the score. Eg:

I should 1 2 3 4 5 6 7 Should not

Fully/Partially Implement the care round

Q11. Most people who I work with that are important to me think that:

I should 1 2 3 4 5 6 7 Should not

Fully/Partially Implement the care round

Q12. It is expected of me that I **fully/partially implement** hourly care rounds using the checklist:

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

Q13. I feel under peer pressure to *fully/partially implement* hourly care rounds using the checklist:

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

Q14. Colleagues who are important to me want me to *fully/partially implement* care rounds using the checklist:

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

Q15. The hospital management and senior nursing staff think:

I should 1 2 3 4 5 6 7 Should not

Fully/Partially complete an hourly care round checklist

Q16. Non-Nursing staff would:

approve +3 +2 +1 0 -1 -2 -3 disapprove

of a **full/partial** completion of the care round checklist

Q17. Patients and their relatives:

disapprove -3 -2 -1 0 +1 +2 +3 approve

when I **fully/partially** complete the hourly care round checklist

Q18. The Nursing Staff always:

approve +3 +2 +1 0 -1 -2 -3 disapprove

of a **full/partial** completion of the hourly care round checklist

Q19. Generally there is:

approval **+3 +2 +1 0 -1 -2 -3** disapproval

of my **fully/partially** completing an hourly care round checklist

Q20. If other areas of care are neglected, managers and senior nurses:

disapprove **-3 -2 -1 0 +1 +2 +3** approve

of my **fully/partially** completing an hourly care round checklist

Q21. When patients feel that care rounds are unnecessary:

I should **1 2 3 4 5 6 7** Should not

complete a **full/partial** hourly care round checklist

Q22. What the hospital management and senior staff think I should do matters to me:

Not at all **1 2 3 4 5 6 7** Very much

Q23. What non-nursing staff think is important to me:

Not at all **1 2 3 4 5 6 7** Very much

Q24. What patients and their relatives think I should do matters to me:

Not at all **1 2 3 4 5 6 7** Very much

Q25. Doing what other nurses do in their **full/partial** completion of care rounds is important to me:

Not at all **1 2 3 4 5 6 7** Very much

Q26. If the majority of staff approved of the **full/partial** implementation of hourly care rounds, this would matter to me:

Not at all 1 2 3 4 5 6 7 Very much

Q27. Knowing that by completing care rounds, other areas of care is neglected matters to me:

Not at all 1 2 3 4 5 6 7 Very much

Q28. Doing what patients and their relatives expect me to do is important to me:

Not at all 1 2 3 4 5 6 7 Very much

Q29. An overall feeling of pressure makes me think:

I should 1 2 3 4 5 6 7 Should not

Fully/partially Implement hourly care rounds

Q30. How colleagues complete their care rounds:

Should 1 2 3 4 5 6 7 Should not

affect how I complete my care rounds

Q31. Now that care rounds are just a routine task:

I Should 1 2 3 4 5 6 7 Should not

affect how I complete my care rounds

Q32. How members of the MDT complete their care rounds:

Should 1 2 3 4 5 6 7 Should not

affect how I complete my care rounds

Q33. A general lack of interest in care rounds:

Should 1 2 3 4 5 6 7 Should not

affect how I complete my care rounds

Q34. Being put under pressure when completing a **full/partial** care round matters to me:

Not at all 1 2 3 4 5 6 7 Very much

Q35. What colleagues think I should do is important to me:

Not at all 1 2 3 4 5 6 7 Very much

Q36. Now care rounds are routine practice this effects completion:

Not at all 1 2 3 4 5 6 7 Very much

Q37. What other members of the MDT think matters to me:

Not at all 1 2 3 4 5 6 7 Very much

Q38. Others lack of interest in care rounds matters to me:

Not at all 1 2 3 4 5 6 7 Very much

SECTION 4

Your perceptions on the practicalities involved in implementing care rounds

Again, when you complete this section where indicated **can you circle either** **fully** or **partially** and also indicate the score Eg:

I should 1 2 3 4 5 6 7 Should not

Fully/Partially Implement the care round

You are due to implement your hourly care round:

Q39. You are confident you can **fully/partially** implement the care round checklist during your working shift if you wanted to:

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

Q40. For me to **fully/partially** complete hourly care round checklists is:

Easy +3 +2 +1 0 -1 -2 -3 Difficult

Q41. The decision to complete a **full or partial** hourly care round checklist is beyond my control:

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

Q42. Whether I complete a **full or partial** hourly care round checklist is entirely up to me:

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

Q43. Having an increased number of staff will help to complete a **full/partial** care rounds:

Unlikely 1 2 3 4 5 6 7 Likely

Q44. Good communication and delegation can help to complete **full/partial** care rounds:

Likely 1 2 3 4 5 6 7 Unlikely

Q45. The number of patients and their condition can affect the **full/partial** completion of care rounds:

Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

Q46. When I am busy providing other essential care this can affect the **full/partial** completion of care rounds:

Likely 1 2 3 4 5 6 7 Unlikely

Q47. When we are short-staffed this can affect the **full/partial** completion of care rounds:

Likely 1 2 3 4 5 6 7 Unlikely

Q48. When patients are off the ward, this makes it very difficult to complete a **full/partial** care round:

Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

Q49. When I am trying to complete the **full/partial** care round in a complex ward environment I find this difficult:

Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

Q50. When I am trying to complete a **full/partial** care round when patients have a variety of needs, this makes completion more difficult:

Likely 1 2 3 4 5 6 7 Unlikely

Q51. When I am completing a **full/partial** care rounds at night this is easier:

Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

Q52. When we have an increased number of staff I feel I am:

Less likely 1 2 3 4 5 6 7 More likely

to complete the care round

Q53. When there is good communication and delegation I feel it will be:

Much easier 1 2 3 4 5 6 7 Much more difficult

to complete a **full/partial** care round

Q54. When I have too many patients and patients who are poorly I feel that it is:

Much More Difficult 1 2 3 4 5 6 7 Much easier

to complete a **full/partial** care round

Q55. Being busy providing other essential care means it will be:

Less likely 1 2 3 4 5 6 7 More Likely

I will **fully/partially** complete the care round

Q56. When we are short-staffed it will be:

much easier 1 2 3 4 5 6 7 much more difficult

to **fully/partially** complete the care round

Q57. When patients are off the ward, I find it:

much more difficult 1 2 3 4 5 6 7 much easier

to complete a **full/partial** care round

Q58. Nursing on a complex ward environment I find is:

much more difficult 1 2 3 4 5 6 7 much easier

to complete **full/partial** care rounds

Q59. When I am nursing patients with complex needs I find it will be:

Less likely 1 2 3 4 5 6 7 More Likely

I will successfully complete a **full/partial** care round

Q60. When I am completing care rounds at night, I find it is:

much more difficult 1 2 3 4 5 6 7 much easier

to complete a **full/partial** care round using the checklist

SECTION 5

Your actual care round practice

You are due to fully/partially implement your hourly care round:

Q61. Care Rounds are carried out at the patient's bedside:

- (a) None
- (b) 25% of the time
- (c) 50% of the time
- (d) 75% of the time
- (e) Always

Q62. Implementing care rounds using the checklist is something I do automatically?

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

Q63. Implementing care rounds is something I do without having to consciously remember?

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

Q64. Implementing care rounds is something that belongs to my hourly routine?

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

Q65. Implementing care rounds is something I start doing before I realise I am doing to it:

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

Q66. Implementing care rounds is something I have been doing for a long time:

Strongly disagree 1 2 3 4 5 6 7 Strongly agree



APPENDIX Y: University of Birmingham

QUESTIONNAIRE (FINAL VERSION)

Factors influencing the implementation of CARE ROUNDS

November 2014

As part of new research within the University of Birmingham, we are interested in learning more about how you implement care rounds using the care round checklist. In particular we are interested in what may influence your perceptions of using the care round checklist as part of your care delivery. Therefore we are asking for your assistance in completing the following questionnaire.

Please read the following instructions before answering the questions

- For the purpose of this study please think about your individual views on how **you complete care rounds** with the aid of the care round checklist
- Please circle the option which best represents your answer. There are no correct or incorrect answers. We are interested in your use and perceptions of implementing care rounds, not what you think you should answer.
- Your answers will remain strictly confidential. You will not be identified as an individual at any point. Results of the study may be published in a health related journal, but no information that may lead to the identification of any individual will be released.
- The questionnaire should take approximately 10 minutes to complete.
- **Please return your questionnaire in the box provided in your Sisters/Charge Nurses office**
- If you have any queries with the questionnaire please contact:

Ben Appleby (*Doctoral Researcher*) on [REDACTED]

or

Dr Carolyn Roskell (*Study Co-ordinator*) on [REDACTED]

How to fill in this questionnaire

This questionnaire asks a series of questions about care rounds. On the next pages there are a number of statements about care rounds and how you complete hourly care rounds using the care round checklist. One question asks you to indicate the clinical area (not the ward) in which you work. All remaining questions ask you to circle a response.

Example 1

Most questions ask you if you 'strongly disagree' to 'strongly agree' with a statement. For example some people may strongly agree that **'the number of patients you care for can have an effect on your ability to complete hour care round checks'**, so you would respond like this:

strongly disagree moderately disagree weakly disagree weakly agree moderately agree **strongly agree**

Someone else may agree with the statement but not feel that strongly, and would respond like this:

strongly disagree moderately disagree weakly disagree weakly agree **moderately agree** strongly agree

For others, however, they will feel strongly that the number of patients they care for does not affect their ability to complete hourly care round checklists, and would respond like this:

strongly disagree moderately disagree weakly disagree weakly agree moderately agree strongly agree

There are no right or wrong answers so circle the answer that best describes how you feel for each question.

Example 2

A few questions ask you to circle a response to a numerical scale. For example If you think care rounds are very good at promoting patient interaction, you would respond like this:

Strongly agree **1** 2 3 4 5 6 Strongly disagree

Alternatively, if you hold only cautiously supportive views of care rounds in the promotion of patient interaction, you would respond like this.

Strongly agree 1 2 **3** 4 5 6 Strongly disagree

SECTION 1
Your details

Q1.	<p>Are you?</p> <ul style="list-style-type: none"> • Male • Female 		
Q2.	<p>What is your age range?</p> <ul style="list-style-type: none"> • 17-20 years old • 21-25 years old • 26-35 years old • 36-45 years old • 46-55 years old • 56-65 years old 		
Q3.	<p>What are you employed as?</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top;"> <p>HCA/Auxiliary Band 3 Band 4</p> </td> <td style="width: 50%; vertical-align: top;"> <p>Registered Nurse Band 5 Band 6 Band 7 Band 8</p> </td> </tr> </table>	<p>HCA/Auxiliary Band 3 Band 4</p>	<p>Registered Nurse Band 5 Band 6 Band 7 Band 8</p>
<p>HCA/Auxiliary Band 3 Band 4</p>	<p>Registered Nurse Band 5 Band 6 Band 7 Band 8</p>		
Q4.	<p>Which hospital floor do you work on?</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top;"> <ul style="list-style-type: none"> • Floor 2 • Floor 3 • Floor 4 </td> <td style="width: 50%; vertical-align: top;"> <ul style="list-style-type: none"> • Floor 5 • Floor 6 </td> </tr> </table>	<ul style="list-style-type: none"> • Floor 2 • Floor 3 • Floor 4 	<ul style="list-style-type: none"> • Floor 5 • Floor 6
<ul style="list-style-type: none"> • Floor 2 • Floor 3 • Floor 4 	<ul style="list-style-type: none"> • Floor 5 • Floor 6 		
Q5.	<p>In which clinical area do you work? Please write this down below:</p> <p>The clinical area I work in is</p>		

SECTION 2

Your Patients

1. The majority of patients I currently care for are self-caring

strongly disagree	moderately disagree	weakly disagree	weakly agree	moderately agree	strongly agree
-------------------	---------------------	-----------------	--------------	------------------	----------------

2. I often look after patients that are disorientated or confused

strongly disagree	moderately disagree	weakly disagree	weakly agree	moderately agree	strongly agree
-------------------	---------------------	-----------------	--------------	------------------	----------------

3. I often provide care for individual patients for over an hour at a time

strongly disagree	moderately disagree	weakly disagree	weakly agree	moderately agree	strongly agree
-------------------	---------------------	-----------------	--------------	------------------	----------------

4. My patients are generally willing to engage in the completion of the checklist

strongly disagree	moderately disagree	weakly disagree	weakly agree	moderately agree	strongly agree
-------------------	---------------------	-----------------	--------------	------------------	----------------

5. My patients are often acutely unwell and require some assistance from care staff

strongly disagree	moderately disagree	weakly disagree	weakly agree	moderately agree	strongly agree
-------------------	---------------------	-----------------	--------------	------------------	----------------

6. Most of my patients are unconscious and are totally dependent on care staff

strongly disagree	moderately disagree	weakly disagree	weakly agree	moderately agree	strongly agree
-------------------	---------------------	-----------------	--------------	------------------	----------------

SECTION 3
Your care round activity

Please answer ONLY A **or** B below based upon your day to day practice

A: ALL ELEMENTS OF THE CHECKLIST ARE COMPLETED

The care round (guided by the checklist) is completed every hour when possible with the full co-operation of the patient

I expect to complete all elements of the checklist and implement the care round with the patient on an hourly basis
Strongly agree 1 2 3 4 5 6 Strongly disagree
I want to complete all elements of the checklist and implement the care round with the patient on an hourly basis
Definitely True 1 2 3 4 5 6 Definitely False
I intend to complete all elements of the checklist and implement the care round with the patient on an hourly basis
Unlikely 1 2 3 4 5 6 Likely

OR

B: ONLY ESSENTIAL ELEMENTS OF THE CHECKLIST ARE COMPLETED

The care round (guided by the checklist) is completed every hour with or without the co-operation of the patient.

I expect to complete only essential elements of the checklist and implement the care round on an hourly basis with or without the co-operation of the patient
Strongly agree 1 2 3 4 5 6 Strongly disagree
I want to complete only essential elements of the checklist and implement the care round on an hourly basis with or without the co-operation of the patient
Definitely True 1 2 3 4 5 6 Definitely False
I intend to complete only essential elements of the checklist and implement the care round on an hourly basis with or without the co-operation of the patient
Unlikely 1 2 3 4 5 6 Likely

1. When I complete the care round checklist this is at the patient's bedside

A, None of the time B, 25% of the time C, 50% of the time D, 75% of the time E, Always

2. When I implement care rounds using the checklist I do this automatically

strongly moderately weakly weakly moderately strongly
disagree disagree disagree agree agree agree

3. When I implement care rounds using the checklist I do this without having to consciously remember

strongly moderately weakly weakly moderately strongly
disagree disagree disagree agree agree agree

4. Implementing care rounds checks using the checklist is something that belongs to my hourly routine

strongly moderately weakly weakly moderately strongly
disagree disagree disagree agree agree agree

5. Implementing care rounds using the checklist is something I start doing before I realise I am doing it

strongly moderately weakly weakly moderately strongly
disagree disagree disagree agree agree agree

6. Implementing care rounds using the checklist is something I do without thinking

strongly moderately weakly weakly moderately strongly
disagree disagree disagree agree agree agree

7. Implementing care rounds using the checklist is something I would find hard not to do

strongly moderately weakly weakly moderately strongly
disagree disagree disagree agree agree agree

8. When implementing care rounds using the checklist I have no need to think about what I am doing

strongly moderately weakly weakly moderately strongly
disagree disagree disagree agree agree agree

SECTION 4

Your attitudes and beliefs towards care rounds

1. Completing all elements of the care round checklist every hour with full co-operation of the patient is

Necessary 1 2 3 4 5 6 Unnecessary

Good 1 2 3 4 5 6 Bad

Important (for me) 1 2 3 4 5 6 Unimportant (to me)

Useless 1 2 3 4 5 6 Useful

Convenient 1 2 3 4 5 6 Unconvenient

2. Completing only essential elements of the care round checklist with or without the full co-operation of the patient is

Necessary 1 2 3 4 5 6 Unnecessary

Good 1 2 3 4 5 6 Bad

Important (for me) 1 2 3 4 5 6 Unimportant (to me)

Useless 1 2 3 4 5 6 Useful

Convenient 1 2 3 4 5 6 Unconvenient

3. When I use the care round checklist it helps to provide evidence of care provision

strongly
disagree

moderately
disagree

weakly
disagree

weakly
agree

moderately
agree

strongly
agree

4. When I use the care round checklist it acts as a reminder or prompt to implement the care round

strongly disagree	moderately disagree	weakly disagree	weakly agree	moderately agree	strongly agree
-------------------	---------------------	-----------------	--------------	------------------	----------------

5. There is a lack of time to complete the care round checklist every hour

strongly disagree	moderately disagree	weakly disagree	weakly agree	moderately agree	strongly agree
-------------------	---------------------	-----------------	--------------	------------------	----------------

6. When I am busy, using the checklist helps me to coordinate basic care

strongly disagree	moderately disagree	weakly disagree	weakly agree	moderately agree	strongly agree
-------------------	---------------------	-----------------	--------------	------------------	----------------

7. I think the checklist is viewed as a good assessment tool for assessing basic needs

strongly disagree	moderately disagree	weakly disagree	weakly agree	moderately agree	strongly agree
-------------------	---------------------	-----------------	--------------	------------------	----------------

8. In complex ward environments the checklist helps me re-focus to my patients needs

strongly disagree	moderately disagree	weakly disagree	weakly agree	moderately agree	strongly agree
-------------------	---------------------	-----------------	--------------	------------------	----------------

9. Implementing hourly care rounds using the checklist creates too much workload and stress

strongly disagree	moderately disagree	weakly disagree	weakly agree	moderately agree	strongly agree
-------------------	---------------------	-----------------	--------------	------------------	----------------

10. Using the care round checklist helps to promote patient contact

strongly disagree	moderately disagree	weakly disagree	weakly agree	moderately agree	strongly agree
-------------------	---------------------	-----------------	--------------	------------------	----------------

11. Hourly care round checks can distract from me providing an individualised patient assessment

strongly disagree moderately disagree weakly disagree weakly agree moderately agree strongly agree

12. Hourly care round checks help to promote patient communication

strongly disagree moderately disagree weakly disagree weakly agree moderately agree strongly agree

13. If I do not tick the checklist every hour this does not necessarily reflect actual care input

strongly disagree moderately disagree weakly disagree weakly agree moderately agree strongly agree

14. For some staff, the completion of hourly care round checks can result in just ticking boxes

strongly disagree moderately disagree weakly disagree weakly agree moderately agree strongly agree

15. More support from multi-disciplinary and medical staff would help to successfully implement the care round checklist hourly

strongly disagree moderately disagree weakly disagree weakly agree moderately agree strongly agree

16. Improving the care round checklist design would help to assess patients' needs

strongly disagree moderately disagree weakly disagree weakly agree moderately agree strongly agree

17. Completing the hourly care round checklist can be an annoying and frustrating task

strongly disagree moderately disagree weakly disagree weakly agree moderately agree strongly agree

SECTION 5

Perceptions of completing care rounds in your hospital

Those people that work with you in the hospital may hold different views on how to implement the care round checklist. Some colleagues may think that completing **ALL ELEMENTS OF THE CHECKLIST** every hour with the full co-operation of the patient (when possible) is how care round checks should be completed. Some colleagues may think that completing only **ESSENTIAL ELEMENTS OF THE CHECKLIST** every hour with or without the co-operation of the patient is how care round checklists should be completed.

Can you either circle **A or B** to indicate what you think your colleague's expectations are of how you should complete the hourly care round checklist:

A In most circumstances my colleagues think I should complete ALL ELEMENTS OF THE CARE ROUND CHECKLIST every hour with the full co-operation (when possible) of the patient

OR

B In most circumstances my colleagues think that I should complete only ESSENTIAL ELEMENTS OF THE CARE ROUND CHECKLIST every hour with or without the full co-operation of the patient.

1. Most people who I work with that are important to me think I should implement the care round checklist

strongly disagree moderately disagree weakly disagree weakly agree moderately agree strongly agree

2. It is expected of me that I implement hourly care rounds using the checklist

strongly disagree moderately disagree weakly disagree weakly agree moderately agree strongly agree

3. I feel under peer pressure to implement hourly care rounds using the checklist

strongly disagree moderately disagree weakly disagree weakly agree moderately agree strongly agree

4. Colleagues who are important to me want me to implement care rounds using the checklist

strongly disagree moderately disagree weakly disagree weakly agree moderately agree strongly agree

5. Completing the hourly care round check list as recommended by clinical senior staff is important to me

strongly disagree moderately disagree weakly disagree weakly agree moderately agree strongly agree

6. When I implement the care round checklist this sets a standard for other members of the Multi-Disciplinary Team who could complete parts of the checklist

strongly disagree moderately disagree weakly disagree weakly agree moderately agree strongly agree

7. My patient's relatives or family appreciate my completion of hourly care round checks

strongly disagree moderately disagree weakly disagree weakly agree moderately agree strongly agree

8. When I complete the hourly care round checklist this is appreciated by my colleagues

strongly disagree moderately disagree weakly disagree weakly agree moderately agree strongly agree

9. Clinical senior staff raise concerns if hourly care round checks get in the way of providing other essential care

strongly disagree moderately disagree weakly disagree weakly agree moderately agree strongly agree

10. Implementing care round checklists in the same way as my colleagues matters to me

strongly disagree moderately disagree weakly disagree weakly agree moderately agree strongly agree

11. If patients feel that care rounds are unnecessary this matters to how I complete the round

strongly disagree moderately disagree weakly disagree weakly agree moderately agree strongly agree

12. I should complete care round checklists in the same way as my colleagues

strongly disagree moderately disagree weakly disagree weakly agree moderately agree strongly agree

13. Having staff approval to how I complete the checklist is important to me

strongly disagree moderately disagree weakly disagree weakly agree moderately agree strongly agree

14. Staff's lack of interest in the completion of care rounds affects how I complete my rounds

strongly disagree moderately disagree weakly disagree weakly agree moderately agree strongly agree

15. Patient's generally approve of when I implement hourly care round checks using the checklist

strongly disagree moderately disagree weakly disagree weakly agree moderately agree strongly agree

SECTION 6

Practicalities of implementing care rounds

1. I am confident that for most of my patient's I can implement all elements of the care round checklist every hour with the full co-operation of my patient

strongly disagree	moderately disagree	weakly disagree	weakly agree	moderately agree	strongly agree
-------------------	---------------------	-----------------	--------------	------------------	----------------

2. I am confident that for most of my patient's I can implement the essential elements of the checklist every hour with or without the full co-operation of the patient

strongly disagree	moderately disagree	weakly disagree	weakly agree	moderately agree	strongly agree
-------------------	---------------------	-----------------	--------------	------------------	----------------

3. Completing all elements of the checklist with the full co-operation of the patient is easy

strongly disagree	moderately disagree	weakly disagree	weakly agree	moderately agree	strongly agree
-------------------	---------------------	-----------------	--------------	------------------	----------------

4. Completing only essential elements of the checklist with or without the full co-operation of the patient is easy

strongly disagree	moderately disagree	weakly disagree	weakly agree	moderately agree	strongly agree
-------------------	---------------------	-----------------	--------------	------------------	----------------

5. The decision to complete hourly care round checklists is beyond my control

strongly disagree	moderately disagree	weakly disagree	weakly agree	moderately agree	strongly agree
-------------------	---------------------	-----------------	--------------	------------------	----------------

6. Whether I implement all or only essential elements of the checklist with or without the patient is entirely up to me

strongly disagree	moderately disagree	weakly disagree	weakly agree	moderately agree	strongly agree
-------------------	---------------------	-----------------	--------------	------------------	----------------

7. Having a full complement of staff helps me to complete hourly care round checks

strongly disagree	moderately disagree	weakly disagree	weakly agree	moderately agree	strongly agree
-------------------	---------------------	-----------------	--------------	------------------	----------------

8. Effective communication helps to ensure hourly checklists are completed for all patients

strongly disagree moderately disagree weakly disagree weakly agree moderately agree strongly agree

9. Effective delegation ensures patients receive hourly care round checks

strongly disagree moderately disagree weakly disagree weakly agree moderately agree strongly agree

10. The number of patients I care for on a shift has a direct effect on hourly completion of the checklist

strongly disagree moderately disagree weakly disagree weakly agree moderately agree strongly agree

11. The patient's condition has a significant impact on my ability to complete all my patients' hourly care round checklists

strongly disagree moderately disagree weakly disagree weakly agree moderately agree strongly agree

12. When my patients are off the ward this effects my ability to complete their hourly care round checklist

strongly disagree moderately disagree weakly disagree weakly agree moderately agree strongly agree

13. Completing hourly care round checklists for all my patients' is very difficult in ward environments which are complex

strongly disagree moderately disagree weakly disagree weakly agree moderately agree strongly agree

14. When I am having to spend extensive time caring for one of my patient's, it is very difficult to get round to all my patients every hour

strongly disagree moderately disagree weakly disagree weakly agree moderately agree strongly agree

15. Completing my care rounds at night is easier than on a day-time shift

strongly disagree	moderately disagree	weakly disagree	weakly agree	moderately agree	strongly agree
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The end! Thank you

APPENDIX Z. Care Round Checklist

CARE ROUND CHECKLIST

ID sticker label

Date/...../.....

PATIENT		Imaging	Procedure	Therapies	Other	Other	Other
OFF THE WARD	Time left (24hr clock)						
	Time returned (24hr clock)						

Time	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Comfortable → S.K.I.N. Tool																								
Pain → Pain Chart																								
Toilet/continence check → FBC																								
Appropriate clothes/covers																								
Glasses ■ Y ■ N																								
Hearing aid ■ Y ■ N ■ L ■ R																								
Footwear → Falls Assessment																								
Labelled walking aid ■ Y ■ N																								
Bed table																								
Bed area																								
Activity eg. book/TV																								
Visitor present*																								
Teeth/dentures/mouth care																								
Drink/supplement → FBC/Food Diary																								
Meal* → MUST/Food Diary																								
Feeding tube ■ Y ■ N → FBC																								
IV check ■ Y ■ N → PVC																								
Wound dressing check* ■ Y ■ N → Wound Assessment Chart																								
Buzzer working and within reach																								
Patient visible from corridor																								
Initial																								

*May not be appropriate if patient is asleep