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**PREPARING MENTAL HEALTH NURSES FOR THEIR
MEDICINES MANAGEMENT ROLE: AN EVALUATION OF A
NOVEL TRAINING APPROACH**

STEPHEN JOHN HEMINGWAY

A thesis submitted to the University of Huddersfield in partial fulfilment of the requirements for the degree of Doctor of Philosophy by Publication

University of Huddersfield

March 2015

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ABSTRACT

Aims: The overall aim of this programme of research is to evaluate aspects of an innovative approach to the education and training for a sample of student and registered mental health nurses (MHNs) in preparation for their medicines management (MM) role. In addition papers are included that make a contribution toward what is known about this fundamentally important responsibility for the MHN.

Background: Medicines management is an established role for the registered MHN. Medicines prescribed for people diagnosed with a mental illness can be therapeutic but this is complicated by potential short and long-term side effects, which can produce extreme discomfort, and even can be life limiting. In these circumstances it is of paramount importance that the nurse needs to have the requisite knowledge and skill to assist the patient gain the maximum therapeutic benefit whilst minimising any potential harm including medicine administration errors. There is however a paucity of evidence concerning the preparation of mental health nurses (MHNs) to undertake medicines management in their undergraduate and early career as a registered practitioner. There is also a significant criticism in the research literature about MHNs suggesting they lack the appropriate underpinning knowledge and skills to perform MM that is safe and inclusive of the patient prescribed psychotropic medication.

Methods: This thesis analyses several publications over a defined period 2009-2014 and describes a coherent programme of research including:

- The evaluation of a collaborative four-stepped approach between an NHS Trust and a University. Aspects of the approach evaluated included: a Psychopharmacology Workbook; An Objective Structured Clinical Examination; a Competence Assessment Framework for Administering Medicines. All these components had the intention of building the requisite knowledge and skill base to teach both student and registered nurses competently to undertake MM.
- The consideration of conceptual approaches that the MHN may adopt toward their MM work and relationship with the patient.
- Analysis of the contribution of the submitted publications to the evidence base of MHN education and training for MM.

Findings: The programme of research indicated that MHNs do not have sufficient education and training to undertake MM. In addition, although they value education and training toward MM, student nurses think they learn better when the content they receive is clinically focused. A dedicated diet of education and training for MM, in the framework of a stepped approach was perceived both by student and registered MHNs positively. The sample of nurses reported it enhanced their knowledge and skill base to practice MM safely and competently. However, the MHNs had criticisms in that they

considered that there was a lack of clinical validity and overuse of simulated assessments as a learning mode. A number of related findings emerged from the programme of research: (1) the prevention errors in medicines administration needs to involve an organisational 'systems' approach; (2) establishing a conceptual approach to medicines management training can enhance the subsequent relationship the MHN has with patients who are prescribed psychotropic medication; (3) the MHN role when managing medicines has to include physical health assessments, and education and training initiatives needs to reflect this.

Conclusions: Using a 'stepped approach' to prepare mental health nurses in the undergraduate and early career following registration for their MM role is generally well received by nursing students and practitioners who felt it would enhance their competency. The findings indicate that this novel approach to training has the potential to contribute to safer clinical practice. Prospective studies are now needed to find out if this approach in the early stages of the mental health nurse career does indeed produce improved outcomes in terms of therapeutic gain and reduced risks for the patient who is prescribed psychotropic medication. The potential of the stepped approach as a model needs to encompass all four stages. Thus further work to develop and implement the latter two stages and evaluate their impact is needed.

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There are numerous individuals who have provided constant support, advice and encouragement at various stages throughout the development of my published studies and thesis.

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1.0 INTRODUCTION

The overarching topic of this thesis is the safe management of medicines used to treat people with mental health problems. The use of psychotropic medication has been a mainstay in the treatment of mental health conditions since the 1950s, and mental health nurses (MHNs) have been strongly associated with administering such treatment and assessing the outcome (Chadwick & Bressington, 2009). Taking psychotropic medicines has serious health consequences due to their side effect profile (N. Harris, 2009); In addition if medicines errors are made this can also lead to harmful consequences for the patient (Maidment, Lelliott, & Paton, 2006); therefore competency of those involved in medicines management is of potential concern.

1.1 Definition of medicines management

The Medicines and Health Regulatory Agency give this definition of medicines management (MM), which is endorsed by the UK regulatory body for nursing (Nursing and Midwifery Council, 2008):

“The clinical, cost-effective and safe use of medicines to ensure patients get the maximum benefit from the medicines they need, while at the same time minimising potential harm.” (Medicines and Healthcare Products Regulatory Agency 2004).

Medicines management needs a whole-system approach (Rich, 2004). Such an approach might involve the organisation of the healthcare workforce, contexts of care provision and use of resources when prescribing, dispensing, storing, ordering or administering medication. The prevention of errors and patient safety is also at the heart of MM delivery.’

1.2 The mental health nurse and medicines management: a background

MHNs form the largest professional workforce in mental health care and they have for a long period been associated in administering medicines used to treat symptoms of mental illness (Edward & Alderman, 2013). The MM role of MHNs has evolved so that they are involved in all aspects of the cycle of prescribing medicines. MM has been simply described as good clinical practice for MHNs to meet the individual needs of patients who are prescribed psychotropic medication (White, 2004) more explicit description of the MHN role with MM includes working both with a the prescriber and pharmacist, actively administering medicines, then assessing for therapeutic outcome or potential side effects, engaging the patient and promoting adherence including the provision of education and information (Haw, Stubbs, & Dickens, 2015). There are specific standards a student nurse must attain in order to gain the necessary skills to practice MM as a registered nurse (Nursing and Midwifery Council, 2010). There are also 26 ‘Standards’ for medicines management that a registered nurse must adhere in order to practice them safely and competently (Nursing and Midwifery Council, 2008).

A conceptualisation of MM, and the nursing role in that cycle is set out in Figure 1.1. The cycle potentially is a sequential process. However this is not always the case and there is potential for drug errors and mistakes. If the potential for error is not prevented, this in turn would negate the chance of positive health gain from taking the medication and could even threaten patient safety.

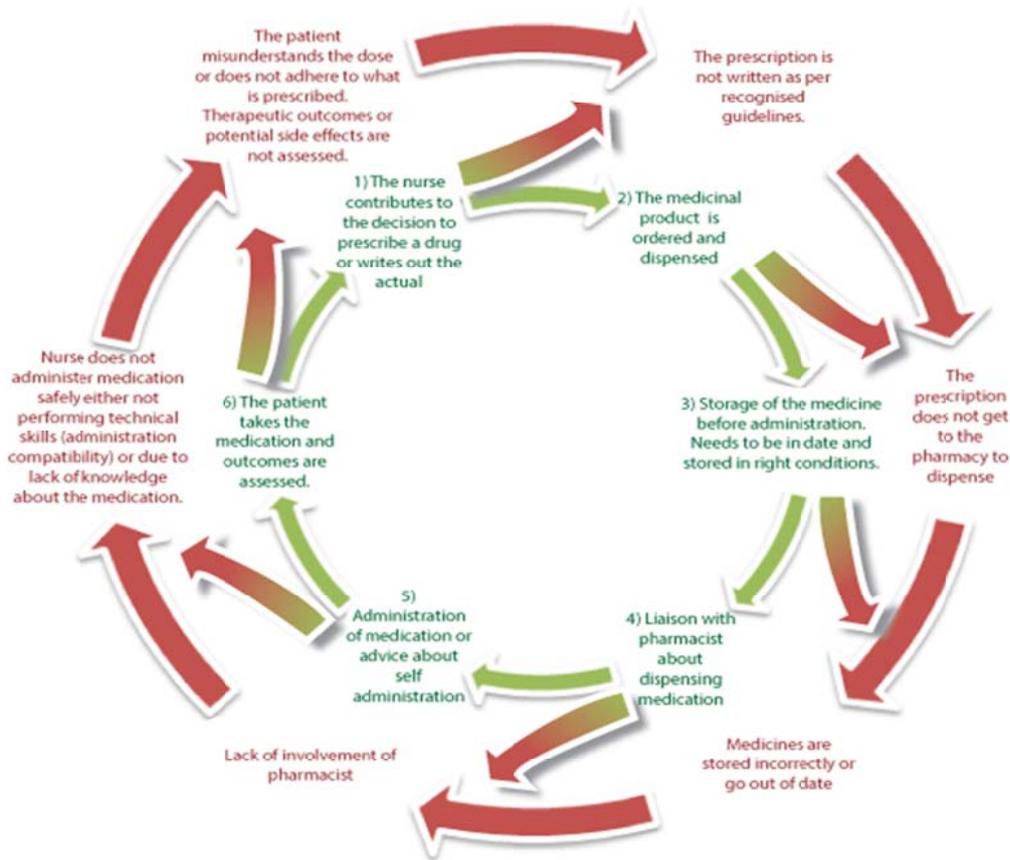


Figure 1.1 The nurse's role in the MM cycle (adapted from Rich, 2004). The nurse can be involved at one or more stages of the cycle (green arrows) with the typical activities including contributing to the prescription decision, ordering a drug for example as part of ward stock, in the inpatient setting checking that medicines are appropriately stored and in date. Other activities could include liaison with pharmacist regarding the dispensing of medications; for example on discharge from hospital and the administration of oral medicines to inpatients, and giving advice to the patient about the medicine they have been prescribed in the home setting. The nurse plays an active role throughout the cycle with responsibility to ensure the patient receives the right treatment with minimal risk. However during the cycle there is potential for drug errors or mistakes to occur that threaten patient safety (red arrows). The following sections provide further discussion of the MHN role with MM as a background for this thesis.

1.3 The medicines management role of Mental Health Nurses: now and the future

This role for MHN involves a whole range of care interventions right across the lifespan. Of primary importance is assessment of the outcomes of psychotropic medication in terms of therapeutic benefit, safety, side effects and patient satisfaction (Gray, Spilling, Burgess, & Newey, 2009); although not the sole professional group involved, nurses have an on-going influence on the MM process (Edward & Alderman, 2013). The type of MM interventions that MHNs implement also mirrors the context of care and the related mental health problems (Bradley, 2009; Hemingway & Scarrott, 2009). The role of the nurse administering medication orally in the inpatient setting with the adult age and older people has been widely reported (Dickens, Stubbs, & Haw, 2008; Duxbury, Wright, Bradley, & Barnes, 2010). Secondly, administering medication via the intramuscular route for people cared for in the community has an established evidence base (Gray et al., 2009; Hemingway, Covill, & Holliday, 2013). The wide-ranging role that MHNs have in medication interventions has also received attention in terms of engaging the patient in the management of their medicines. Thus what has been termed 'medicines adherence', 'therapeutic alliance' or 'medicines management' training have all been reported in the research literature (Bressington, Coren, & MacInnes, 2013; Byrne & Deane, 2011; Gray, White, Schulz, & Abderhalden, 2010). A final example is the MHN medicines management role in memory services where memory nurses are working successfully with the diagnosis of dementia and extending their role toward prescribing drugs to maintain and improve memory (Kennedy & Sud, 2013).

Overall, the professional and scientific literature shows that nurses are regularly involved in medicines management, have a variety of related roles, and can be expected to have familiarity with drugs in different contexts where they may influence treatment decisions.

1.4 Problems with psychotropic medication

One of the major problems with the patients' experience of taking psychotropic medicines is their side effects. Unfortunately, antipsychotics, mood stabilisers and, to a certain extent, antidepressants induce associated 'iatrogenic' morbidity and significantly contribute toward decreasing life expectancy (Edward & Alderman, 2013). In some cases people diagnosed with a serious mental illness die over 20 years younger than the general population, with psychotropic medication being a major factor (Edward, Rasmussen, & Munro, 2010; Nash, 2011). There are also associated problems for people over the age of 65, for whom the prescription of certain antipsychotics can increase the risk of stroke (Wattis & Curran, 2013). Thus there is an increasing recognition that the prescription of psychotropic medication deserves caution. The most recent example of this is the recently updated Guideline (CG 76) on Psychosis and Schizophrenia (National Institute of Health and Clinical Excellence, 2014), which advises that as soon as any patient is prescribed antipsychotic medication there needs to be screening and management of potential physical health changes, thus an appropriate assessment before prescribing this medication needs to be made.

There are also potential problems with polypharmacy. For example, older people may be prescribed multiple drugs at the same time, which can create problems if one medicine interacts with, and adversely affects, the action of another drug (Jordan et al., 2014). Added to this, the efficacy of psychotropic medication has been questioned, with some studies showing antipsychotics have some short-term efficacy but no real long term gain (B. A. Harris & Shattell, 2012; Moncrieff, 2013). Similarly, the over-use of antidepressants has been criticized, with their efficacy being questioned, along with distressing side effects identified (Middleton & Moncrieff, 2011). It is perhaps not surprising with such evident problems that patients do not adhere to their prescribed psychotropic drugs, with a reported figure of 50-80% of people of adult age not taking their medication as prescribed (Bressington et al., 2013). This suggests a role for MHNs in educating patients about the medication they take, and in the detection and management of side effects, otherwise any positive outcomes may be negated.

1.5 Medicines management interventions: are mental health nurses fit for practice?

The success of any intervention is whether it is effective. The reported outcomes of MHNs using specific MM approaches have been mixed.

Firstly, the process of nurses administering medication and the therapeutic outcomes are at least problematic and not without its critics. The role of the nurse administering medication is to do so safely and competently so the patient receives the optimum benefit (Duxbury et al., 2010; Hemingway et al., 2010). Secondly, medicine administration errors have been found to be a common reported occurrence (Haw, Stubbs, & Dickens, 2007; Procyshyn, Barr, Brickell, & Honer, 2010). Administration of medicine errors occur despite the best intention of the individual and the organisation to prevent them occurring (Armitage, 2009), and such errors can also arise due to the nurse sometimes multi-tasking in a busy and noisy inpatient environment (Brady, Malone, & Fleming, 2009). However, deficits in knowledge about medication or deviating away from procedures are also significant factors for administration errors occurring (Haw et al., 2015).

Studies over the last decade have noted that patients do value psychotropic medication, but they want to know more about the drug prescribed for them and be involved in the treatment decisions, unfortunately the MHN has been found lacking by not making themselves available to discuss such issues (Duxbury et al., 2010; Happell, Manias, & Roper, 2004). The administration of medicine within the inpatient environment as a result is often seen as a punitive rather than restorative intervention (Wakefield, 2012). In another context, the administration of intramuscular psychotropic medication (the predominant route employed in the community setting) has also been criticised as way of controlling the person with serious mental illness (Patel, Taylor, & David, 2009). In this sense the MHN has been seen as an agent of the state enforcing medication, as distinct from giving an intervention that promotes well-being and choice for the patient (Waddell & Taylor, 2009). It may be that appropriate education and training that can facilitate expert practice, is not in place. Lack of an underpinning knowledge and value base to improve the patient experience and their health outcomes

is the potential result (Hemingway, Covill, et al., 2013). This may be a contributory factor to the criticism of the nurses' MM performance, particularly in the actual administration of medicines (Snowden & Barron, 2011).

In contrast to the post graduate context, there have been encouraging post graduate studies showing how educating and training MHNs in medicines adherence appears to have had some transfer to practice. Some initiatives involving educating MHNs with appropriate skills and knowledge, so that they engage the service user toward adherence of medication, and subsequently improved health and social outcomes has been successful (Bressington et al., 2013; Byrne & Deane, 2011; N. Harris, Lovell, Day, & Roberts, 2009). The involvement of MHNs in detecting and managing adverse drug reactions from prescribed psychotropic medication has also shown some promise (Jordan et al., 2014). Indeed, a systematic review found medicines management to be an effective post-graduate MHN intervention (Curran & Brooker, 2007). Thus if a similar emphasis was invested to include student nurses, and this was continued in their early career, it could make a major contribution to the performance of MHNs undertaking MM.

The complexities involved with psychotropic medication, emphasises the need for skilled and knowledgeable practitioners to work with patients, their carers and other healthcare professionals in order to achieve the optimum outcome (Snowden 2010). With the exception of some postgraduate initiatives, the literature, suggests that the skills and knowledge of MHNs especially in the early phases of their career to undertake medicine management interventions, are not fit for practice. Figure 1.2 illustrates how this deficit impacts on clinical practice.

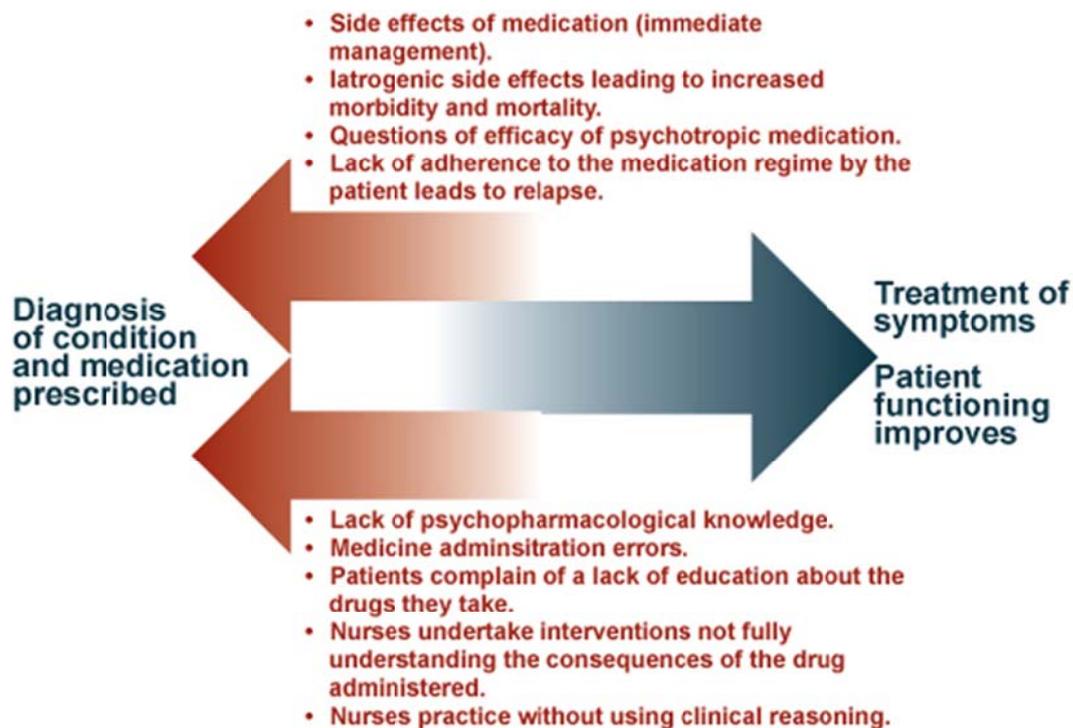


Figure 1.2. *Psychotropic medication outcomes. The grey arrow indicates what should be a clear path between a prescription and a therapeutic outcome. The two brown arrows illustrate how barriers can negate the effectiveness of psychotropic medication and MHN-related interventions.*

1.6 MHNs knowledge and skills: A training deficit?

The preparation of MHNs' psychopharmacological knowledge has been criticised of lacking depth to underpin MM or without emphasis on skills acquisition, to actually practice in undergraduate or postgraduate contexts (Gray et al., 2009). The MHN preparation for prescribing medication for MHNs has been questioned, with an apparent lack of psychopharmacological knowledge on which to base practice highlighted (M. Jones, Robson, Whitfield, & Gray, 2010; Skingsley, Bradley, & Nolan, 2006). Added to this, recent research has also found that MHNs developing as prescribers, realised they did not know as much about psychopharmacology and related matters as they thought they did (Bradley, Wain, & Nolan, 2008; Snowden & Barron, 2011). This then calls into question the preparation of MHNs for the medicine related interventions. The deficit in the pharmacology and general bioscience content of MHN undergraduate curriculum and related criticisms of nurses' MM performance is not a new phenomenon (Jordan, Philpin, Davies, & Andrade, 2000). The apparent lack of knowledge may be linked to lack of importance placed on pharmacology by undergraduate nursing lecturers, where only a third felt pharmacology should be taught at this level (Bradley, Blackshaw, & Nolan, 2006). The emphasis MM should receive in the undergraduate curriculum has also been questioned: should it have a stand-alone identity as a module on its own, or integrated with other aspects of care (Banning, 2004)? There have also been concerns raised about the ability of a busy overstretched clinical mentor having the time to attend to assessing the undergraduate nurse competency in

practice (Bradshaw & Merriman, 2008). It may be these issues have been influencing factors toward MM content in the undergraduate context and beyond, has not received the prominence that is needed.

Therefore, the evidence discussed so far, points to the importance of comprehensively preparing MHNs to practice safely and comprehensively when undertaking medicines management interventions. This is needed to prevent errors, administer medication effectively, monitor side effects, and promote adherence by engaging the patient in decisions about medicines prescribed for them (Jordan, Jones, & Sargeant, 2009). However, with the exception of education and training to engage the patient (Bressington et al., 2013; Byrne & Deane, 2011; N. Harris et al., 2009), imparting the underpinning knowledge and skills has not been as rigorous as it should be when undertaking MM involving psychotropic medication. This is illustrated in Figure 1.3. Medicines management interventions are underpinned by clinical skills and knowledge on which to base treatment decisions. However, there are barriers (or hurdles) to overcome if the necessary skills and knowledge are to be in place.

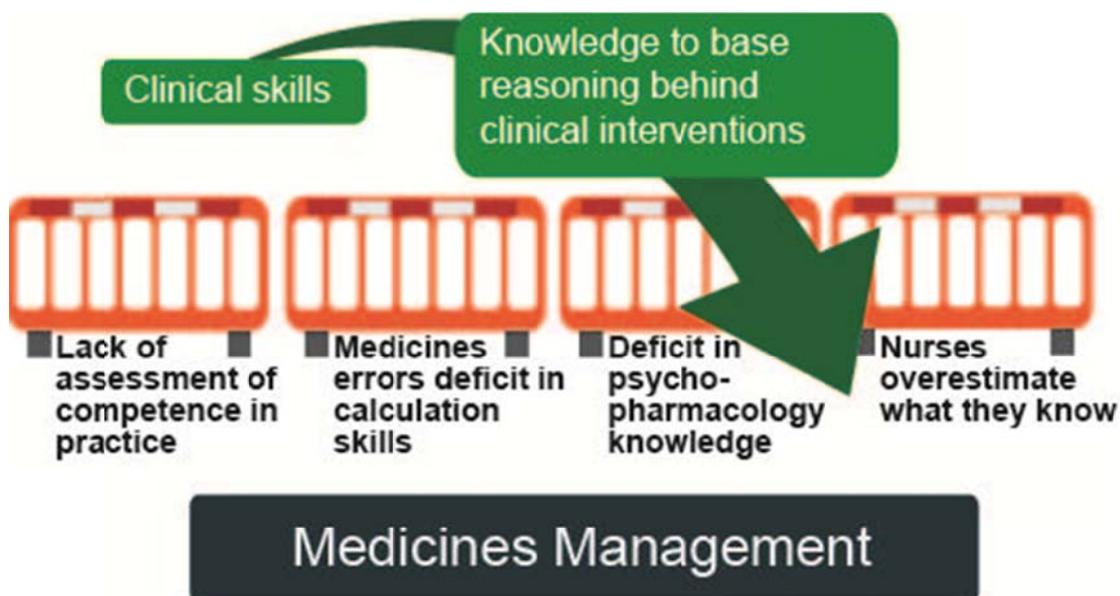


Figure 1.3. *The lack of underpinning preparation in skills and knowledge. The figure presents the barriers that need to be addressed (illustrated as hurdles to be jumped) in order to practice medicines management safely and competently. Thus MHNs need education addressing knowledge in order to have the sufficient knowledge and clinical skill application for clinical practice.*

1.7 Summary

The MHN spends the largest amount of their time with patients working in all aspects of medicines management, thus they have a key role in ensuring the therapeutic benefits outweigh the risks. The preparation for the medicines management role for MHNs, is the central focus of the papers presented in this thesis. Considering the development and implementation of a pathway to competence in MM, and evaluating its impact, will provide the evidence to determine its contribution to knowledge in this important area of MHN practice. Specifically this thesis will consider the undergraduate and initial years of the MHN career following registration and how such an approach to facilitating MM skills and knowledge impacts on their clinical practice. This is distinct from the role of independent or supplementary prescriber that the MHN may go onto practice but only after three years post-registration experience and appropriate education and training.

2.0 THE DEVELOPMENT OF A STEPPED APPROACH TO FACILITATE THE ACQUISITION OF KNOWLEDGE AND SKILLS IN MEDICINES MANAGEMENT

2.1 Collaboration

Studies that are closely related to the underlying topic of this thesis, have involved MHNs who accessed a course toward the qualification of non-medical prescribing. Findings in these studies reported MHNs stating they do not have the baseline psychopharmacological knowledge or clinical reasoning skills, in order to prescribe (Hemingway, 2005; Skingsley et al., 2006). In a reflection on developing as a non-medical prescriber (Hemingway, 2008) and in a commissioned review of the UK context of MHN prescribing (Hemingway & Ely, 2009), the researcher found a consistent issue to be the lack of appropriate education and training toward MM in the pre and post registration periods of the MHN career. Thus if an approach that addresses competence in MM was to be implemented, one way forward would be a collaboration between practice and education that may help overcome the knowledge and skill deficit.

2.2 The Medicines with Respect Project

The University of Huddersfield and the South West Yorkshire Partnership NHS Foundation Trust (SWYPFT) have a long history of collaborating as education and training partners for mental health and learning disability undergraduate nurse training (Hargate, Hemingway, Plummer, & Padgett, 2008). Indeed most MHN graduates from the University of Huddersfield go on to work for SWYPFT. One such collaboration is medicines management, and the two organisations discussed how to improve the competence of MHNs in MM which was expanded by the researcher to include other Universities (Hull and Sheffield Hallam) and their associated NHS Trusts (See White 2004), (Turner, Gardner, Staples, & Chapman, 2007; Turner, Gardner, Staples, & Chapman, 2008).

Discussions took place from 2007 in order to decide how the different organisations could work together to improve the education and training of MHNs for MM. After several meetings a potential stepped approach to bridging education, and training from MHN undergraduate, to the practising registered nurse was developed (see Figure 2.1). The collaborative project adopted the title of the Medicines with Respect (MwR) Project (Hemingway et al., 2010). The title was previously used in the Sheffield evaluation of a medicines management initiative (Turner et al., 2007). The MwR title illustrated what the project involved, in that it gave 'respect' to the learning and skills acquisition so that the patient receives the optimum chance of safe and effective MM interventions.

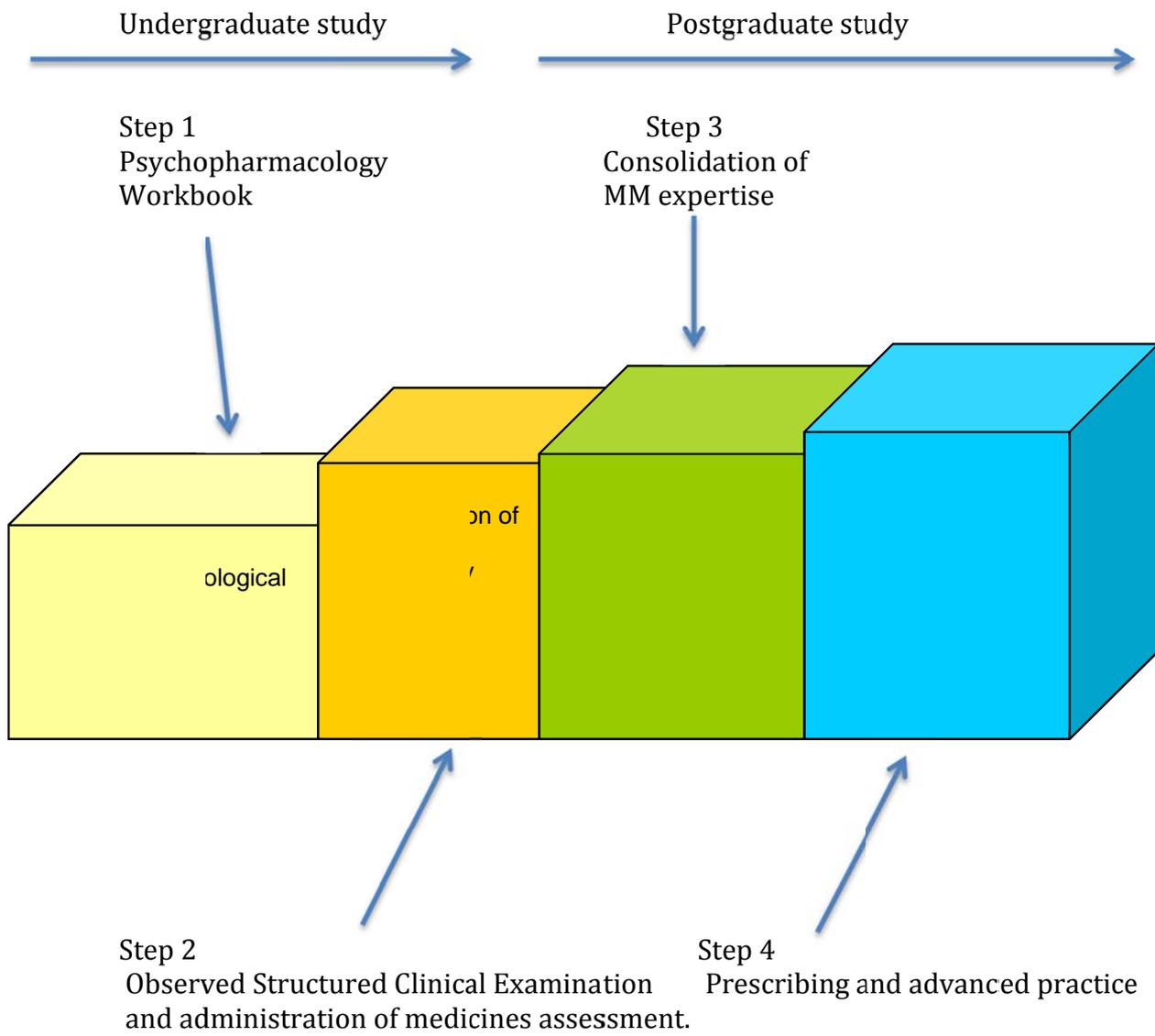


Figure 2.1 Stages 1-4 Stepped Approach to Medicines Management. (Hemingway et al., 2010)

2.3 Implementing the stepped approach

A four-step approach to the education and training of MHNs toward gaining MM competence was envisaged (Hemingway et al., 2010). Only the first two steps are described in detail, as studies presented in the thesis evaluated these and not the third and fourth steps of the approach.

Step 1 involved MHN students being given a psychopharmacology workbook, originally developed at the University of Huddersfield, to complete as part of their second year clinical placement assessments. The workbook contains theoretical underpinnings of pharmacology and medicines used in mental health settings. This consists of two parts: the first containing pharmacological and common used terminologies with MM, and the second being a focus on the five major classes of psychotropic medication used to treat mental health conditions (see appendix 3).

Step 2, the students' competency in the administration of medicines, was assessed using two methods. Firstly, an adapted Objective Structured Clinical Examination (OSCE) was introduced in the final year of study at the University of Huddersfield. OSCEs were first introduced in the 1970's, to bring about a more objective focus to assess medical students clinical performance (Rushforth, 2007). The OSCE has been adapted for use in nursing for over two decades (Selim, Ramadan, El-Gueneidy, & Gaafer, 2012). Third year students undertook the adapted OSCE when simulating the administration of medicine within the University skills laboratory. The student was assessed in their technical skill and underpinning pharmacological knowledge, to administer oral and intramuscular medication in the OSCE, in a simulated environment developed at Huddersfield (Hemingway et al., 2010). MHNs administer psychotropic medication using the oral and intramuscular routes, thus competence assessment would need to reflect this (Hemingway, Covill, et al., 2013). The OSCE was conducted at the point of the three-year course, just before the student commenced their final third and final year placements. Thus the student would have the chance to have their administration of medicines performance assessed, and as a result of the assessment feedback, implement this in practice (see appendix 4). Secondly competence frameworks for the oral and intramuscular administration of medicines were used, to assess MHNs skills and knowledge performance in the clinical situation. These competence frameworks updated the existing document for oral medicines administration in Sheffield (Turner et al., 2007; Turner et al., 2008), and an additional assessment of competence for intramuscular medication was developed (Hemingway et al., 2010). The frameworks had four sections where the MHN competence would be assessed: Environment; Preparation; Administration and Theoretical Questions (see appendix 5). MHNs targeted were students in their final year of practice, newly registered nurses in their first year preceptorship period, and teams in the clinical environment (for example inpatient wards) that wished to update their skills and knowledge toward administration of medicines.

Step 3 involved the MHN accessing a medicines management module that further refined their skills and knowledge in MM.

Step 4 involved the development of the MHN toward prescribing of psychotropic medication with a sufficient grounding in knowledge and skills in MM.

2.4 Process of evaluation

A tender to evaluate the project in, was submitted to Yorkshire and Humber Strategic Health Authority, the former body that funded healthcare education and training in the region. The bid was successful and £20,000 was secured, with the University of Huddersfield as the fundholder and lead organisation.

The overall objectives of the project were to:

- Refine, embed and evaluate the stepped approach to medicines management in terms of assessing the confidence and practice of student and registered MHNs

This would be undertaken at the following time-points:

- Whilst students as part of their undergraduate programme
- During preceptorship programmes for newly qualified staff nurses working in partner NHS Trusts

Each University and associated Trusts were responsible for implementing the stepped approach. The University of Huddersfield as fund holder was tasked with evaluating the project. Thus evaluations were to be implemented at Huddersfield and SWYPFT, and would be replicated at the University of Hull, Sheffield Hallam University and associated NHS Trust organisations. Finally, an overall evaluation of the project was to be produced and sent to the YSTHA, and the findings reported locally and nationally.

The MWR project group decided how to use the funding gained for the evaluation of the first two stages of the stepped approach. Firstly, due to the limited time allocated for the funded project evaluation, concentrating on these stages seemed workable. Secondly, (as it would take time to refine and embed the different aspects of the stages), concentration on the first two stages was less resource intensive. One deciding factor for the potential evaluation of step 3 of the approach was that the module that was directly related did not recruit, thus negating the potential of recruiting participants. This was for several reasons, including changes in post-graduate provision at the University of Huddersfield, and study leave opportunities being severely cut back at associated local NHS organisations. The fourth and last step would not need to be part of the evaluation at this stage, as MHNs as potential prescribers would not develop into this role for several years henceforward.

2.5 Summary

The evaluation and what is presented in this thesis involves steps 1 and 2 of the approach. Due to various reasons, although some of the stepped approach was used at Sheffield Hallam and University of Hull and associated Trusts, they decided not to fully implement it, and due to this and other logistical problems, they did not undertake any form of evaluation related to the MWR project. The following chapters present the commentary on the research undertaken by the University of Huddersfield and SWYPFT, and is presented in the 11 publications that form the basis of this thesis. Figure 2.2 gives an outline of the published studies and explains why they are included in the thesis.

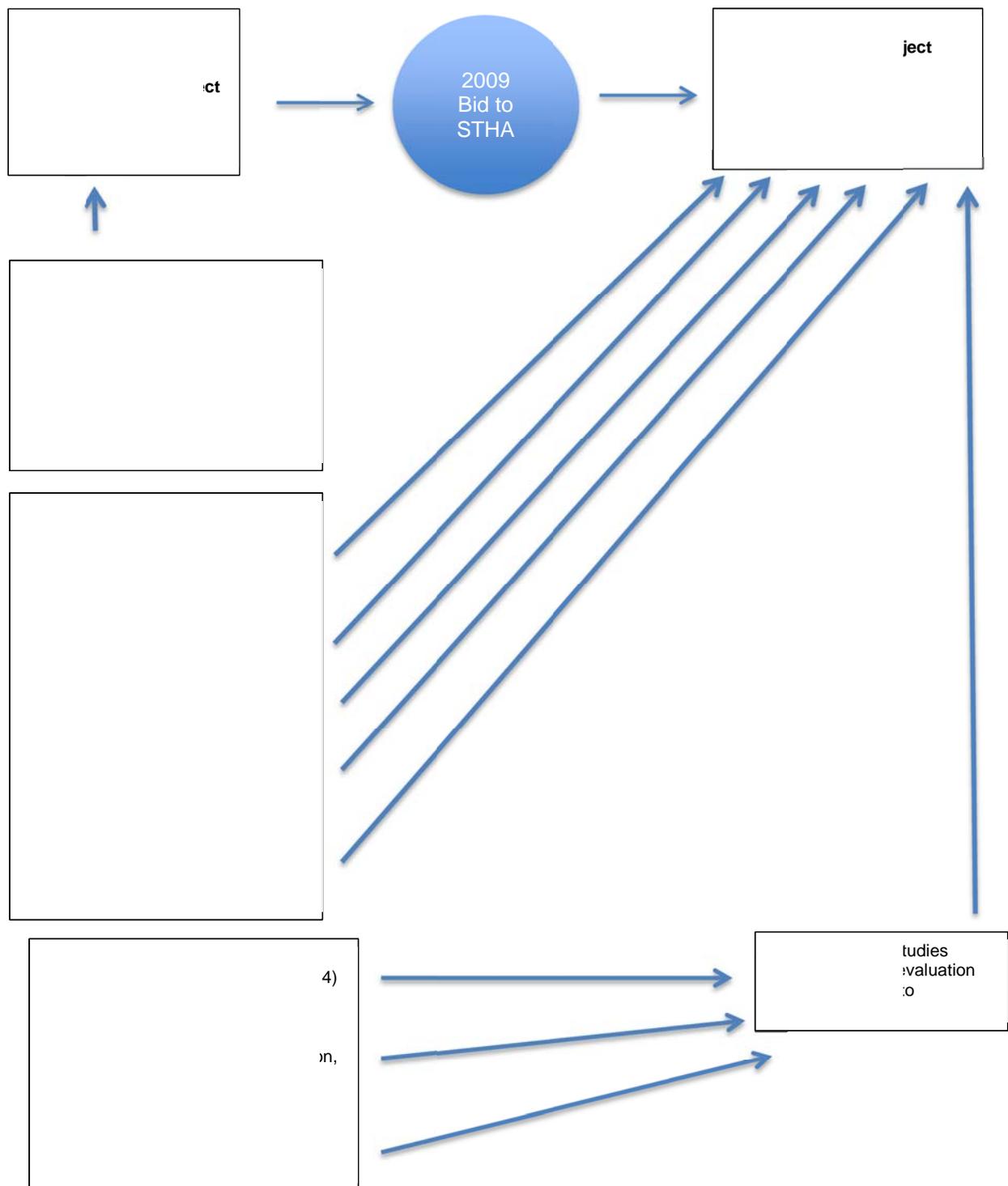


Figure 2.2 Conceptualisation of the included studies and relationship to the MwR project evaluation. The papers naturally fall into three parts, and described in detail in three subsections in Chapter 3, are: (A) a background to the stepped approach - Papers 1 and 2 (3.2); (B) articles that report on studies that evaluated the approach - Papers 3, 4, 5, 6, 7 and 9 (3.2.1); (C) papers that do not have a direct link to the project implementation, but offer evidence of the researcher's contribution to knowledge on issues about how MHNs can implement the requisite knowledge and skill, that is needed to achieve the optimum outcomes from their MM practice - Papers 8, 10 and 11(3.2.2).

3.0 CRITICAL OVERVIEW OF INCLUDED PUBLISHED STUDIES

3.1 Introduction

This chapter will now consider the 11 published studies as set out in the three sections (see Figure 2.2). Firstly an introduction to the papers that is included in each section is provided (3.2). Thirdly the underlying theoretical perspective of pragmatism is set out, and then a critical overview of the research methods is considered (3.3). Fourthly, the strengths and limitations and how they relate to the MWR evaluation is set out (3.4). The chapter concludes with a summation of the study findings and potential research and practice implications (3.5).

3.2 Inclusion of the eleven published studies

Papers 1-11 all were included as they would make a contribution to the focus of the thesis of MHNs preparation for their MM role. The order has been set out in Figure 2.2. The reasons as to why the studies were undertaken is fully discussed in papers 1-11 (see appendix 2.1-2.11).

3.3 Research methods-a pragmatic approach

The one underlying theory that links the research approaches is pragmatism, this is a philosophical standpoint proposing the use of manifold methods in the pursuit of research inquiry (Andrew & Halcomb, 2009). Adopting a pragmatic approach to methods used in research acknowledges the epistemological differences between qualitative and quantitative approaches but do not see these forms of inquiry as the opposites of spectrum, rather as approaches to research that can bring about positive change (Bishop, 2015). Rather than debating dualism and whether objectivity or subjectivity should be adopted, pragmatists may ask does the research reflect the real world (Prion & Adamson, 2015)? Therefore the main narrative is whether a research method will reflect the topic under study rather than whether it is the preferred method of the researcher (Bowling, 2014). Pragmatism is mainly associated with mixed methods approach (although not exclusively) where using more than one method on a research project produces a more complete evaluation of the phenomena under study (Bishop, 2015).

Within medicines research and the search for the holy grail of an evidence base, the result has been evidence (for example NICE guidance and research) being dominated by 'vested interests' for example if the pharmaceutical industry sponsors projects (Greenhalgh, Howick, & Maskrey, 2014). Greenhalgh and colleagues go on to suggest that the volume of clinical guidance has become unmanageable, with statistical significance in studies not reflecting the multimorbidity or reality of clinical practice. What is left then is a tick box exercise in healthcare where fidelity to NICE and other

guidance and management driven rather than with the patient centered (Greenhalgh et al., 2014). The pragmatic approach calls for evidence that reflects clinical reality and explains and confirms if a particular intervention works in the real world rather than the divisive and limited mode of quantitative or qualitative methods (Onwuegbuzie & Leech, 2005). Thus pragmatism offers a way forward for evidenced based medicine 'a movement in crisis', whereby a renaissance in medicine research can take place, rather than a purist stance of using methods from competing methodologies that do not put the patient need at the centre (Greenhalgh et al., 2014).

When discussing the MM role of MHNs the need is for high quality research that can explain the circumstances and pragmatically evaluate the outcomes of such MM whether in contexts of care (John Baker, Duxbury, & Turner, 2009), or in the role of prescribing (Snowden, 2009). The need for a coherent approach to any project is necessary and this is no different when pragmatism is the overarching theoretical perspective (Snowden & Atkinson, 2012). The research approaches published in the 11 papers included in this thesis use mixed methods, as well as qualitative and quantitative research designs. These methods evaluated both a specific part of MM in context, and whether the intended outcomes of the stepped approach had been realised-thus reflecting a pragmatic style of inquiry (Onwuegbuzie & Leech, 2005). The evaluative methods employed included audit and more traditional research evaluation methods. The research strategies reflected the different aims and objectives that needed addressing, in order to feedback to the MWR project and factors related to the education and training of MHNs for MM. Table 3.1 gives a summary appraisal of the research methods used in each published study included in the thesis.

Table 3.1 Summary appraisals of published studies

No	Design	Data Collection/Analysis	Findings	Strengths +/- Limitations	Implications
1	Theoretical focus	Narrative Review	Deficit in preparation of MHNs for the MM role.	+ Review specifically focused to inform the stepped approach - Not systematic review.	Set a background for the stepped approach design and content.
2	Mixed Method	Questionnaire	Sample positive toward MM preparation. Preference for clinical v theory.	+ Large purposeful sample - Questionnaire construction.	Pre-registration MM education and training content is valued. Students' learning is enhanced when the focus is focused on practice.
3	Audit/ Mixed Method	Questionnaire	Questionnaire captured appropriate data.	+ Successful Pilot - Descriptive not inferential statistics.	Questionnaire shown to be reliable and valid.
4	Audit/ Mixed Method	Questionnaire/ Statistical	Competence assessment well received. Some criticism of its use in terms of which MHN targeted.	+ Large sample. - Descriptive not inferential statistics.	Framework was used for the intended MHNs and positively received. Some criticism of its use in terms of which MHN targeted.
5	Audit/ Mixed Method	Questionnaire/ Qualitative	Competence assessment well received. Some critical feedback.	+ Examples of the use of the competence assessment - Deductive content analysis may have limited findings.	+ Confirmed statistical findings (<i>Paper 4</i>).
6	Qualitative	Focus Group/ Qualitative	Competence assessment well received. Suggestions to extend its use.	+ Inclusivity and feedback from wider sample of MHNs. - Potential sample bias - Analysis deductive not inductive.	Confirmed findings (papers 4 and 5). Suggestions emerged to extend the competence assessment use.
7	Mixed Method	Questionnaire	OSCE well received. Some criticisms related to its simulated nature and validity.	+ Significant statistical findings - Researcher bias? - Questionnaire reliable and valid?	OSCE effective in motivating students for the assessment. More appropriate as a formative assessment.
8	Audit/ Mixed Method	Questionnaire Conceptual framework	Error occurrence has personal and systemic causation.	+ Large sample. + Inclusivity of MHNs perceptions - Descriptive not inferential statistics.	Organisations need to target system determinants of error.
9	Qualitative	Recorded Interviews	MwR stepped approach perceived to transfer to practice over time.	+ Purposeful sample + Retrospective follow up - Interviewer-interviewee bias - Small sample.	Previous findings confirmed over time.
10	Theoretical focus	Debate	Recognising for the MHN a conceptual view of the MM can inform their practice.	+ Enabled theory and evidence to be considered by MHN in alternative format. - No formal evaluation evidence.	Provides a content to inform the MHN toward their MM practice.
11	Pre and post Test	Questionnaire	Statistically significant improvement in clinical knowledge.	+ Statistical significance - Questionable transfer to practice.	Physical health includes MM. Workshops are one strategy that can be successful in knowledge transformation.

3.3.1 Theoretical Focus

Paper 1 used a narrative review structure to evaluate the implementation of non-medical prescribing (NMP) by MHNs. A narrative rather than a systematic review was undertaken. There was a paucity of outcome studies of MHN prescribing in 2009, and this still remains the case today. Thus a narrative review that offers a critique to assess, analyse and synthesise existing research and place it in its current context, was seen as appropriate (K. Jones, 2013). *Paper 1* included evidence about what can be termed 'barriers' to the implementation of NMP by MHNs, thus the narrative format allowed for this issue to be fully considered. *Paper 10* used a theoretical debate format to explore different concepts for the reader to consider in a different format rather than a traditional research published study. Debates can highlight important issues for nursing to consider for example, about their professional

education (Fealy & McNamara, 2007) or MM (Gournay & Barker, 2002), this was also the intention of *paper 10*.

3.3.2 Clinical Audit

The evaluation of the introduction of the MwR administration of medicines competence assessment was undertaken by clinical audit (*see papers 3, 4, and 5*). Clinical audit has links to quality assurance in setting standards and measuring if their implementation has improved practitioner performance (Bowling, 2014). Thus for the competence frameworks that set out standards, and an assessment of MHN performance in the administration of psychotropic medicine, a clinical audit was deemed an appropriate evaluation method.

3.3.3 Mixed Methods

Studies reported in papers 2, 3, 4, 5, 7, and 8 used a mixed method approach, whereby survey questionnaires employed sought to gain the perceptions of MHNs about the MM education and training initiatives MHNs had experienced. Thus quantitative response questions also had an open-ended section for the participant to further explain their answer to a particular question asked. Therefore the quantitative design was built upon by the qualitative explanation (Bowling, 2014). All questionnaires were of retrospective design. This facilitated MHNs and other practitioners (LDN and Midwives) responded to particular questions about their experiences. This enabled a relatively large number of the intended sample to be targeted, although how the questionnaires were distributed had an effect on how many of the intended sample completed the questionnaires. Consequently for the audit questionnaire reported in papers 3, 4, 5 and 8 there was a reasonable sample take up when the questionnaire was completed in class by students in contrast to registered MHNs who received an email asking them to respond. Papers 2 and 7 also benefitted from distribution of questionnaires by hard copy and therefore, gaining a representative quota of the intended sample.

3.3.4 Quantitative

Paper 11 reported on a pre and post-test design regarding MHN knowledge of the physical health care topics, about which they were attending workshops. The knowledge questions had a mixture of theoretical and skill based knowledge content thus allowing the workshop attenders to test their knowledge on clinically focused content, as well as affording the researchers an insight into how successful the workshops were, in terms of knowledge creation.

3.3.5 Qualitative

Papers 6 and 9 both used qualitative designs; utilising focus group and interview methods respectively to collect data. The use of focus groups (*paper 6*) was successful, as it enabled stakeholders who came to a conference about MwR to give feedback in a supportive structure, as well as listen to other participant's views. The use of in-depth interviews (as reported in *paper 9*), enabled the researcher to explore the experiences of registered MHNs, (who were employed by SWYPFT and were ex-students at the University of Huddersfield), about the MwR stepped approach. The limited number of only nine participants needs consideration, as there could have been 160 MHNs who could have been recruited. However, not all graduates would have been employed by SWYPFT, and the MHNs who were recruited, had the full range of clinical experience (2-4 years), and therefore represented both genders, and gave their experience from a wide variety of clinical contexts. In qualitative research if the sample is purposeful (as reported in *paper 9*), a small sample size can be claimed to be appropriate (Burns & Groves, 2005). The interview data in this case, enabled valuable in-depth insights from participants grounded in experience and appropriate to the research aim in this study (evaluating their perceived experience of the stepped approach).

3.4 Findings

Using the research methods approaches utilised in the published studies, the findings are presented in the following order: *Theoretical* (3.4.1); *Mixed methods* (3.4.2); *Quantitative* (3.4.3); *Qualitative* (3.4.4). Clinical audit is not included as the findings from this are included in the mixed method section (see papers 3, 4 and 5).

3.4.1 Theoretical Focus

Paper 1 in summary showed that some evidence had begun to emerge, that MHNs prescribed safely and competently when compared to psychiatrists, however, this had only been partially implemented and had not become an established part of mental health services. A major theme found from the narrative review, was apparent barriers that meant that only 50% of MHNs who were qualified to do so, went on to prescribe. Major barriers reported, were the lack of support psychiatrists and pharmacists, and also the governance of NHS Trusts to plan Non-Medical Prescribing (NMP) into their workforce. One profound issue that directly relates to this thesis was the cited criticisms of MHNs skills and knowledge, toward psychotropic medication. In looking to the future, the challenge suggested for higher education, was to facilitate the MHN, to have the theoretical underpinning and craft to competently prescribe. *Paper 10* used the debate format to illustrate how conceptually MHNs may perceive their role and subsequent interactions with patients. Each author (Adherence – researcher, concordance-Snowden) stated the case for the adoption of each approach. Identifying which approach in turn can potentially influence the MHN to adopt their chosen approach that could underpin their clinical practice.

3.4.2 Mixed Methods

Studies utilising a mixed method approach and collecting data by questionnaire, in the main all reported positively about the MM education and training initiatives they were evaluating (papers 2, 3, 4, 5 and 7). Whether it was about the effectiveness of the undergraduate experience of MM, the MwR competence frameworks (3, 4 and 5) or OSCE (7) or the findings, all seemingly showed that the content was perceived to be effective by the participants. Papers 2 and 7 (using a similar cross-sectional questionnaire construction), asked participants to rate MM education strategies that they had experienced as undergraduate nurses. Both samples rated the practical application of MM, as the most valued and effective. The practice focused lessons and assessments were seen as statistically the same entity (*paper 2*), although clinical environment was preferred over the simulated contexts for assessment (*paper 7*). Studies utilising qualitative analysis of the questionnaire data, did report less positive feedback. Examples included some participants being critical of what they perceived, as a punitive nature of how the MwR competence framework had been introduced, citing the example of a drug incident. The implementation of the framework was also seen as repetitive by some MHNs, who had undertaken the assessment in their final year of studies at University, as well as in their preceptorship period as a registrant (*paper 5*). It had been envisaged that if the student had undertaken and passed the competence of administration assessment, it would not be necessary to repeat in their preceptorship period (Hemingway et al., 2010). However, after consideration, SWYPFT decided that the assessment was needed to meet their governance and risk procedures. Thus the potential of repetition was apparent. The OSCE evaluation (*paper 7*) also included some negative feedback regarding the clinical validity of a simulated assessment, as well as what appeared to be an anxiety provoking event in comparison to administering medication in practice.

In *paper 8* data were analysed using SPSS (chi-square) and qualitative content analysis. No statistical significance ($P > 0.05$) was found when comparing registered or student MHNs variables, so only descriptive statistics were reported. As reported in *paper 8*, the Swiss cheese model of system failure (Reason, 2000) was used as a conceptual framework to analyse the open-ended data determinants (latent errors), and to active errors (unsafe acts) in medicines administration. External factors reported by student and registered MHNs were: environmental distractions, work related pressures and poorly written administration charts (latent errors). Personal to the nurse however, are pharmacological knowledge and poor drug calculation, (skills that were also reported by the respondents to be significant (latent) factors).

3.4.3 Quantitative

Paper 11 reported on whether series of five workshops improved MHNs physical health knowledge scores before and after attending five physical health workshops. These findings all showed the individual workshops' impact in the improvement in knowledge score to be statistically significant in all cases ($P < 0.001$).

3.4.4 Qualitative

The published papers that reported on studies using a purely qualitative methodology (papers 6 and 9), gave further evidence of how the stepped approach had been perceived by MHNs. Focus groups subject to qualitative content analysis, also gave positive feedback as to the impact of the competence frameworks. In particular, the intent and structure of the assessment of administration framework documentation, was praised as a standard on which the nurse can base their clinical performance. In-depth interviews that also used qualitative content analysis, repeated the positive message as to the aspects of the stepped approach, the participants had experienced (paper 9). The focus group findings also reported barriers to the effectiveness of implementing the competency frameworks, where firstly the individual nurse feeling scrutinised, may be anxious and thus affect confidence and impair their performance in assessments. Secondly, system issues were identified, whereby clinical areas may be busy, noisy or shortages of staff could also negatively impact effect on the assessment.

The findings of *paper 9* included critical content about the validity of the OSCE in terms of the reality of clinical practice, and that it was an anxiety provoking assessment, thus repeating previous findings (papers 5 and 6). The published findings in paper 9 included an in-depth exploration of the impact of the psychopharmacology workbook. Previously, the workbook had only been rated poorly when compared to more practical education and training strategies for MM (see *papers 2 and 7*), but the influence of the theoretical knowledge underpinning practice, was acknowledged by most of the participants. Finally, these findings found all the content of steps 1-2, motivated participants to learn and that the skills and knowledge they had gained from the experience, remains relevant to their everyday practice-(in one case up to 4 years post registration).

3.5 Strengths and limitations of the findings

The eleven published papers, seemingly have positively contributed to the central theme of the outcomes for MM education and training for MHNs. However the potential limitations of the studies, all need to be considered before claims of their generalisability can be made. This section considers the eleven published studies' strengths and limitations, in five overlapping areas: *Theoretical focus-* published studies not involving research evaluation (3.5.1); Discusses if the use of *clinical audit* as a credible research method (3.5.2); Critically considers the use of mixed methods and specifically a survey questionnaire as a way of collecting data (3.5.3); Examines of the use of both *quantitative* (3.5.4) and *qualitative methods* 3.5.5); Appraises potential recruitment and sampling issues (3.5.6). Finally *summarises* the strengths and limitations and their significance to the broader educational and clinical context (3.5.7)

3.5.1 Theoretical Focus

Paper 1 had no outright research design. Instead, it used a narrative review including commentaries, policy and review of the research literature. One of the findings of the paper was the need to embed approaches that would facilitate MHN competence in MM, and build capacity toward the prescribing of medication. Thus if MHNs are prepared rigorously in medicines management, this can meaningfully impact on the skills and confidence to undertake MM including prescribing, (a theme that underpins the MwR stepped approach). The content of *paper 10* was limited to a presentation of personal standpoints, and was more educational in its content rather than considering empirical evidence. Published evidence of the efficacy of adherence approaches (Bressington et al., 2013) and concordance (Snowden, Martin, Mathers, & Donnell, 2014), go further into evaluating the operational use of these conceptual approaches to MM. This paper, although not directly relating to the MwR evaluation, provides a contribution toward the conceptual viewpoints that the MHN, if aware of, can inform the way implement MM is implemented.

3.5.2 Clinic audit

Studies reported in papers 3, 4, and 5 were derived from a clinical audit. Audits have been criticised as a way of bypassing established research protocols including ethics (Ashmore, 2005). However in the published studies where the approach was a clinical audit, all were subject to the ethical and quality processes applied to more overt research methods (see *papers 4 and 5*).

3.5.3 Mixed Method

For papers 3, 4 and 5 the data collection method and related findings, derived from one survey audit questionnaire. One statistical limitation was that the analysis was primarily based on descriptive statistics, therefore inferential testing, did not uncover any significant relationships between variables. The open-ended comments using deductive content analysis, were only compared to pre-existing data quantitative data, thus the findings were limited to this comparison. However a sample of 111 (70 registered and 41 students) can be considered a reasonable sample size to have confidence that the findings are representative in terms of sample demographics, to answer the intended research aim, as well as having some external validity.

Paper 8, utilised the same sample and data, and the same criticisms were apparent. However the reported findings from this study gave important insights, in to what MHNs perceived about the barriers to medicine safety. This was potentially important, as no one identified study, had gained the MHN perspective in this profoundly important issue in clinical practice.

The published studies in *papers 2 and 7* have several apparent limitations. Firstly, the development of the survey questionnaire did not involve full consideration of, either statistical reliability, or validity.

Secondly, the qualitative (open-ended) items were not completed by many of the participants; this may be due to a deficit in the questionnaire construction. Finally the in-class completion of the questionnaire, may have introduced a bias whereby answers were more positive toward their MM undergraduate experience. However as reported in *paper 2*, a sample that included the majority of a student nurse and midwife cohort (131/165), can be considered a significant representation (although less so for child and midwifery), on how their undergraduate experience has impacted on their practice and preparation toward using MM as a registered practitioner. In particular, the attention to preparing the student for the assessment as well as involving clinical experts, (who have up-to-date practice experience) compared to university lecturers assessment. A main finding for this OSCE study (*paper 7*), was that the OSCE created a situation where students have a reason to become motivated toward learning the skills and knowledge necessary, to administer medication safely, although it still does not compare in the student's estimation with assessment in practice.

3.5.4 Quantitative

For *paper 11* the collection of data to assess knowledge acquisition immediately after the workshop, could have given scores that were influenced by the recency with the physical health content. Despite a strong statistical significance finding, the knowledge scores may have been less if they had been taken over a longer time period. The score also may have reflected more significantly, how the knowledge scores were retained when participants had returned to everyday work. Some retrospective follow up questionnaires or interviews, could potentially give a stronger insight as to whether the workshops had resulted in a change in the clinical interventions of the MHN involving physical health.

3.5.5 Qualitative

The studies reporting in papers 6 and 9 have several limitations, mainly involving the qualitative research design. Involving stakeholders to feedback about their experience and perceptions of MwR, is an inclusive way of undertaking evaluation research; in this case the focus groups and in depth interview. However there are some issues that could negate the external validity of this study's findings. The data collection and analysis may have been biased, as contributors in both papers were involved in the research process. Secondly, the use of an independent researcher may have led to different and more objective insights. Finally the use of a recognised qualitative approach, with an established epistemological grounding, could have given the studies a more interpretive focus. However these papers do have findings related to the MwR evaluation and the education and training strategies reported in the paper transferred to clinical practice over time, thus both in their research nature and intention, were fit for purpose (Silverman, 2013). Findings in *paper 6* triangulated further the evaluation reported in papers 3, 4 and 5. The overall theme from the interviews of ex-Huddersfield MHN students (*paper 9*), is potentially a fundamental finding for the evaluation of the MwR project, as the aim was to build capacity of the MHN to practice MM. In essence the findings show that the

content of steps 1 and 2 can transfer to practice over time. However with only a small sample of nine MHNs, claims to establish the external validity of the outcomes of the MwR approach could be questioned (Silverman, 2013). In contrast, the fact that nine MHNs who had undertaken the first two stages of the stepped approach gave in-depth insights into how this content they had experienced impacted on their practice, does give some internal validity. The participants were the intended sample, thus their insights were what the studies aims intended to address (Bowling, 2014).

3.5.6 Sampling and Bias

The MHNs who were recruited in the published studies included in this thesis, to the knowledge of the researcher, all volunteered as willing participants. However there are some issues in terms of potential volunteer bias and the relationship between the researcher and participant's that need to be considered.

MHNs who volunteered and participated in research that were recruited by email (*papers 4, 5,8,9*), or part of a conference (*paper 6*) or workshop (*paper 11*) could have biased toward the intention of each research project. Volunteer bias in terms of willingness to participate in each particular project may have occurred due to them identifying positively with the subject of the research. Thus with the medicines with respect project participants who were happy to report their experiences of undertaking the assessment of medicines administration competence rather than MHNs who were less enamored may have volunteered (*papers 3,4,6*). The same issue may have applied to recruitment for the focus group (*paper 6*) and pre and post-test of a workshop (*paper 11*). The sampling technique and bias is a key determinant in this process. Bias and how to minimize its effect must always be the principal aim in such circumstances (Bowling, 2014). However a counter to the 'positive' slant or bias toward the research evaluations reported in the published studies in this thesis, there has been significant critical feedback from research participants that has contributed to and shaped the reported research. Clear examples of this critical commentary include reports of tick box exercise and punitive use of the MwR competence frameworks (*papers 4 and 5*), plus the repetition of their use in the last year of undergraduate studies and part of the preceptorship assessment for the newly registered nurse (*papers 5 and 9*). Furthermore to hear the narrative and evaluate the feedback of the MHNs who had experienced the stepped approach as a representative and purposeful sample does bring the danger of volunteer bias. Ethical guidelines of sample recruitment and analysis were implemented in order to minimise any bias were reported in papers as appropriate.

There are potential dangers of the participants knowing the researcher as the lecturer imparting delivering the very skills and knowledge strategies that were being evaluated. Papers 2, 7, 9 and 11 all involved MHNs who had or were student nurses of the University of Huddersfield. They will have directly experienced content in class as well as exam decisions the researcher was associated with. This does present an ethical challenge but as reported toward constructively making this process consensual and participatory was considered and applied (Clark & McCann, 2005) - see *papers 7 and 9*. The likelihood between researcher and participant bias (Polit & Beck, 2008) was nevertheless high and could have affected the behavior of the person completing a questionnaire (*paper 7*) or

interviewed (*paper 9*). The apparent danger of subjectivity influencing the research process also brings a potential of participatory narratives constructed between key stakeholders in the process (Silverman, 2013). Qualitative research celebrates how apparent can contribute to the reality of the research when researching a complex world (Bowling, 2014). The primary example of how an apparent subjective set of circumstances-the researcher interviewing ex-students of the University of Huddersfield can be constructive as reported in *paper 9*. The researcher and the nine participants who now as registered nurses had stories to tell about their experiences were able to explore their shared experiences of the content of the stepped approach which included critical as well as positive feedback. The feedback whether positive or negative was reported in the example of *paper 9* and contributed to the reported findings. Therefore although the inherent dangers of bias were present in published studies included in this thesis the relationship between the researcher and student also enabled a meaningful construction in the interview that would have been less apparent should an interviewer not known to the participants and therefore more objective had been in place.

3.5.7 Summary

In concluding this section, the eleven published studies as discussed above, all have various limitations that can question the impact of the studies and their potential external influence. However as in all research, in whatever paradigm it is the overall outcome of the study that determines its influence (Bowling, 2014). Secondly, research that involves a mixture of methods is typical of research involving healthcare topics and presents a challenge about how it integrates into a whole (Saks & Allsop, 2013). This issue will now be considered in the next chapter (chapter 4) and in particular, what contributions to knowledge (in the context of education and training MHNs for their MM role) can be inferred.

4.0 CONTRIBUTION TO THE LEARNING AND TEACHING STRATEGIES FOR MEDICINES MANAGEMENT

4.1 Introduction

The studies in this series of papers demonstrate that MHNs perceived, that a specific diet of MM education and training, can contribute toward MHNs practising safe and competent MM. Using a theoretical content (psychopharmacology workbook), blending this (by incorporating knowledge and skill aspects in simulation (OSCE)), and clinical practice (by use of the competence frameworks), has shown potential, in facilitating the development of MM by MHNs. This evidence now needs to be considered against the existing research on MM for MHNs, as to how both the MWR project and other published studies included in the thesis, contribute to knowledge. Secondly, major themes that have emerged from the thesis will be discussed. Thirdly, the benefits of collaboration or a system approach will be set out. Finally, consideration of how the published studies in the thesis may have more impact will be given.

4.2 - Implementing a stepped approach: What the study findings included in this thesis suggest and their contribution to knowledge

At the outset of the thesis, a picture of the risks and benefits of psychotropic medication was proffered in chapter 1 (1.1-1.4). The role of the MHNs with MM was then explored, and the fact they need to have knowledge and skill about psychotropic medication was then established (1.5). Reasons why MHNs do not have the required set of MM knowledge and skill to practice optimally were then given (1.6 and 1.7). The idea that led to the collaboration of the MWR project was therefore formulated.

Generally all featured published studies in this thesis have been, or are contributing to knowledge, by their dissemination. Through the mediums of Google Scholar, Research Gate and the University of Huddersfield Repository, there is evidence through citations and downloads, that the papers are attracting interest and potentially, could be informing and influencing future research on improving the MHN MM performance.

Paper 1 further gave evidence as to why the MWR project came about, as it set a background for the need for the education and training of MHNs in preparation toward the MM role needed to improve. *Paper 2* gave an indication that the student values MM content linked with clinical practice, this in turn influenced the researcher and the MWR project team to focus the stepped approach in preparing the MHN for their MM role. Furthermore, paper 2 added to the knowledge of nurse and midwifery MM education and training, in recognition of the need for the undergraduate preparation for MM to include an evidence base.

The major focus of this thesis is the use of the stepped approach to medicines management. *Papers 3, 4, 5, 6, 7 and 9* provide some promising evidence that the objectives of MWR project have been successfully implemented. Thus MHN students and registered MHNs have undertaken the stepped approach as a part of the early phases of their careers. Furthermore, the participating MHNs will have received what has been envisaged, as an evidenced based preparation for MM.

Paper 9 provides the important evidence, that practicing clinicians perceived the stepped approach was effective in giving them the knowledge and skills to practice MM. Indeed, part of the evidence of *paper 9*, is that the approach lasts over time and still impacts on their practice. Thus a stand-alone finding is that the stepped approach has potentially had a significant impact on the career of a small sample of MHNs, who had experienced it. Added to this, is the fact that the approach has become embedded within both the University of Huddersfield and SWYPFT, something that has been recognised to have potential to address this knowledge gap and skills gap (Snowden, 2010). There has been an evaluation of the use of a good practice document, to guide the MHN to administer necessary psychotropic medication, but this was only to be utilised by registered nurses on an inpatient adult age ward, thus only in one context of care (JA Baker, Lovell, & Harris, 2008). The stepped approach in terms of breadth (organisations, contexts and content) surpasses any MHN MM education and training initiatives at the time of writing the thesis. The University implemented a new curriculum in 2012 nevertheless; the mental health teaching has continued the use of pharmacology workbook, OSCE and competence assessment framework. SWYPFT has now made the use of competence assessment frameworks, a triennial requirement for MHNs utilising MM as part of their role. This was implemented in part, after feedback from the research (*see paper 6*), as well as a continued commitment by the Trust, to improve the competence of the administration of medicine by the workforce.

The next question is to consider the impact of the papers in this thesis and also their contribution to knowledge. Chapter 1 (in particular 1.7), suggested that there was good evidence in the postgraduate phase of the MHN career of MM knowledge and skills acquisition. The evidence of any application in the early career period of the MHN is sparse, with only recent evidence of any MM skills and knowledge development needs shown by the use of the OSCE for students in studies *papers (2, 7 and 9)*, for students, and the use of the competence frameworks (*papers 3, 4, 5, 6 and 7*). The lack of psychopharmacological knowledge is still reported as a significant issue in terms of the MHNs' knowledge to practice MM (Snowden and Barron 2011). Indeed this lack of knowledge has been highlighted as a significant risk, as MHNs do not have the apparent knowledge to prescribe (M. Jones et al., 2010), and this may also have stopped MHNs actually going on to prescribe due to a lack of confidence when they have done the requisite course (Mangle, Phillips, Pitts, & Laver-Bradbury, 2014; Ross & Kettles, 2012). At the time of writing the thesis, there are no known studies that have sought to address this apparent deficit in psychopharmacological knowledge for undergraduate student MHNs. In terms of the use of an OSCE, *paper 7 concurs* with previous reported study involving student MHNs, that found the OSCE to be a reliable and valid assessment of medication competence (Selim et al., 2012). The student sample in *paper 7*, perceived the OSCE to have

facilitated improvement in their administration of medicines performance, but at same time, they found it to be a very stressful event, repeating reported findings elsewhere (Meechan, Mason, & Catling, 2011; Selim et al., 2012). However there have been no studies following up the influence of the OSCE over time, as evidenced in this thesis in *paper 9*. The use of the assessment of medicines administration competence in practice by both final year mental health nursing students, and preceptor MHNs in their first year as a registered practitioner, appears to be an original piece of research (see papers 3, 4, 5, 6, and 9) and therefore adding to the known knowledge on this important topic.

Paper 8 has contributed to the knowledge on MHN perception of the causes of medicine errors. Recently published research has found a combined lack of knowledge and experience about medicines could lead to error causation (Simonsen, Daehlin, Johansson, & Farup, 2014). Additionally, recently published evidence when observing MHNs administering psychotropic medicines, found significant error rates in Norway (Soerensen, Lisby, Nielsen, Poulsen, & Mainz, 2013) and the UK (Cottney & Innes, 2015). The authors of these papers also suggested, that system related error causation for example distractions and high nursing workload is as responsible as individual nurse error. Simonsen et al's (2014), and Cottney and Innes (2014) thus resonate with *paper 8*'s findings, in terms of the need to see that errors occur due in part to individual nurse deficits (for example lack of knowledge), but also that the employing organization, and other healthcare professionals, (for example prescribing psychiatrists), need to take responsibility in order that the MHN working environment do not create conditions where errors are more likely.

Paper 10 furthered the debate about the theoretical approaches that can inform the MHN MM role, whether aligning MHN interventions with individual beliefs (Pringle, 2013), or adding to the debate of the use of concordance as a way of working with patients using MM (McKinnon, 2014; Snowden et al., 2014).

Paper 11 evaluated the effect of physical health workshops, and importantly established that the iatrogenic side-effects patients experience as a result of taking psychotropic medication have to be a part of any education and training in this respect. The need for MHNs to become more physical health literate as a nursing management issue and how this could be established was also given. This paper adds to the growing body of work that is highlighting the need to improve the physical health interventions by MHNs, that include monitoring and preventing iatrogenic physical complications (Jordan & Kyriacos, 2014; Terry & Cutter, 2013).

4.3 Major themes of the studies

One major theme that links the studies evaluating the stepped approach, is MM competence or lack of competence by MHNs. Sulosaari et al (2011) in an integrated review of the literature on the student nurse medication competence, was split into 3 themes: (1) decision making competence; (2)

theoretical competence; and (3) practical competence. Some studies reported in this thesis attest to these aspects of to the latter two themes in MM competence (see *papers 2, 3, 4, 5, 6, 7 and 9*). There is no clear evidence of decision-making arising from studies presented in this thesis. A recent published study discussed the need for undergraduate education to be grounded in practice to promote confidence and competence (Vaismoradi, Jordan, & Kangasniemi, 2014). The opposite can occur when undergraduate students do not perform competently and medicine errors happen (Dolansky, Druschel, Helba, & Courtney, 2013). The authors repeated the need for students to have exposure to the evidence base behind MM and to have the chance to receive feedback toward improving their performance is imperative, to prepare nurses for their role as registered nurses (Dolansky et al., 2013). This thesis evidences an approach that enables the MHN student to receive the requisite knowledge and skills that continues into the early years of preceptorship and still positively contributes to the MHNs MM performance over time (*paper 9*).

Competence can be considered to be a nebulous concept where performance can alter over time, and between contexts, and for medicines management prescriptive, in the way it is imposed on nurses (Banning, 2012). The use of competency frameworks and OSCE could thus be criticized as reductionist and authoritarian in nature. In order to facilitate a more balanced and holistic educational delivery that facilitates decision-making competence (Sulosaari, Suhonen, & Leino - Kilpi, 2011), more transformational approaches have also been suggested (Banning, 2012). Studies in this thesis (*papers 2, 4, 5, 6, and 9*) do however contain evidence that undertaking competence assessments, do transcend to the MHN practice over time. A recent study of advanced practice MHNs in the USA, found that in the early stage transition from student to registered practitioner, it is vital to put the skills and knowledge (including MM) as the building blocks for competent practice (Alber et al., 2009). Assessment drives learning by putting the building blocks (skills and knowledge) in place to learn increases the chances of competence in clinical practice (Van der Vleuten, Schuwirth, Scheele, Driessen, & Hodges, 2010). Participants overall were happy to have their MM competence assessed, knowing the risks of poor practice as well as seeing it as a learning opportunity (see *papers 6 and 9*). It may even be that more novices in MM can become experts over time, if given the appropriate education and training (Alber et al., 2009).

Medicine safety is a theme that is also prevalent in nursing role in the administration of medicines (Jordan, 2011) and prescribing practice (Bradley, Hynam, & Nolan, 2007). This thesis although not wholly addressing all the apparent problems discussed in sections 1.5-1.7, has shown how if organisations in the University-practice continuum collaborate with the aim of improving safety and practice of the MHN, through acquisition of skills and knowledge to practice MM, this creates a system that has a greater chance of success (see *studies, 3, 4, 5, 6, 7, 9 and 11*). The whole purpose and ethos of the MWR project, was to improve the performance of the MHN performance and minimize any errors that could impact on the wellbeing of the patient, in line with the whole intention of MM (MRHA, 2004). Indeed *paper 8* gave insights into what MHNs perceived as the main determinants of the causes of medicine errors. The stepped approach also imparted knowledge and

skills to undertake MM contained guidelines, in how to proceed when undertaking MM with the underpinning theme of safe practice.

4.4 Benefits of a system approach to MM

At the outset of the MwR project collaboration; there was an agreed principle that for organisations working across the educational and clinical contexts, a system approach would have the greatest impact on the MHN MM role. Concerns remain about the education that nurses have in the bioscience subjects generally and as a preparation for registration for mental health nursing (Haw et al., 2015). The findings from the evaluation of the stepped approach therefore potentially show how other health care providers and partner HEIs could adopt a pathway toward MM competence. Thus if a set of education and training content is provided, and exposes the nurse to the requisite knowledge, skills and procedural aspects of MM, for the nurse as a student and registered nurse (see *studies 4, 5, 6 and 9*), this potentially can begin to redress the bioscience deficit.

In turn the stepped approach components (pharmacology workbook, OSCE, competence assessment framework) and associated physical health workshops (*paper 11*) were designed to transfer, simulate or be implemented in clinical practice. The evidence from participants reporting back on their experiences of the stepped approach content, is that it grounded them in the requisite skills and knowledge as well as giving them a reason to study (see *studies 4, 5, 6 and 7*) and still has relevance for registered MHNs to undertake MM (see *paper 9*). This type of approach has the potential to transfer to other contexts of care outside of mental health. Thus if any nursing student in turn is to have the opportunity and be motivated to learn, the bioscience preparation needs to be applied in the clinical context, so that theory becomes part of reality (Logan & Angel, 2011; McVicar, Andrew, & Kemble, 2014) and possibly as a preparation for the advanced role of prescribing.

4.5 How might the studies have had more impact?

Considering the research impact in health, includes benefits to policy and practice, and risk and the reduction of harm, risk and cost (Saks & Allsop, 2013). However, potentially diluting the impact of studies in the thesis, there are several research design considerations. There was no independent evidence that the implementation of the stepped approach, reduced error, or had been observed that it increased the MHN competence, as compared to nurses who had not experienced it as a student or registered MHN. Findings in the studies offered in the thesis are limited, as they have no evidence that the aspects of the stepped approach have resulted in any causal link to safer practice (see *studies 4, 5, 6, 7 and 9*). Thus designs that included a pre and post or comparison to existing or alternate ways of developing MM skills (for example a Randomised Controlled Trial-RCT), could have tested if there was a causal relationship to this important question. Finally, a major limitation of all the papers is that none had shown any change in clinical practice and no outright influence on the outcomes of MM employed by MHNs. In essence no clinical change was found in any of the studies presented in this thesis. Figure 4.1 illustrates both the included published studies contribution to

knowledge, and what the related future research priorities should be to advance knowledge in this area.

The inclusivity of the studies also needs to be addressed. A major deficit and resultant lack of impact of the studies presented in the research, is the lack of direct patient involvement, something which is an established part of healthcare evaluation (Bowling, 2014). The background to this thesis in chapter 1 emphasised that patients accepted that psychotropic medication can play a part in allowing them to lead meaningful lives, but they wanted to have a more active role in the decisions regarding medicine prescribed for them. Chapter 1 also included criticisms, that patients did not receive information or advice as readily as they might do from MHNs, who may advise them or administer medication to. None of the papers presented in this thesis has an outright involvement from patients, either as part of an evaluation or commentary. If we are to engage the patient, we need to include them in all parts of MM intentions, including research (Maidment, Brown, & Calnan, 2011). Patient outcomes are highlighted throughout all the studies (1-11) but as no direct involvement was overtly shown issues related to safety of medicines, and more therapeutic outcomes can only be assumed, therefore any patient benefit remains notional.

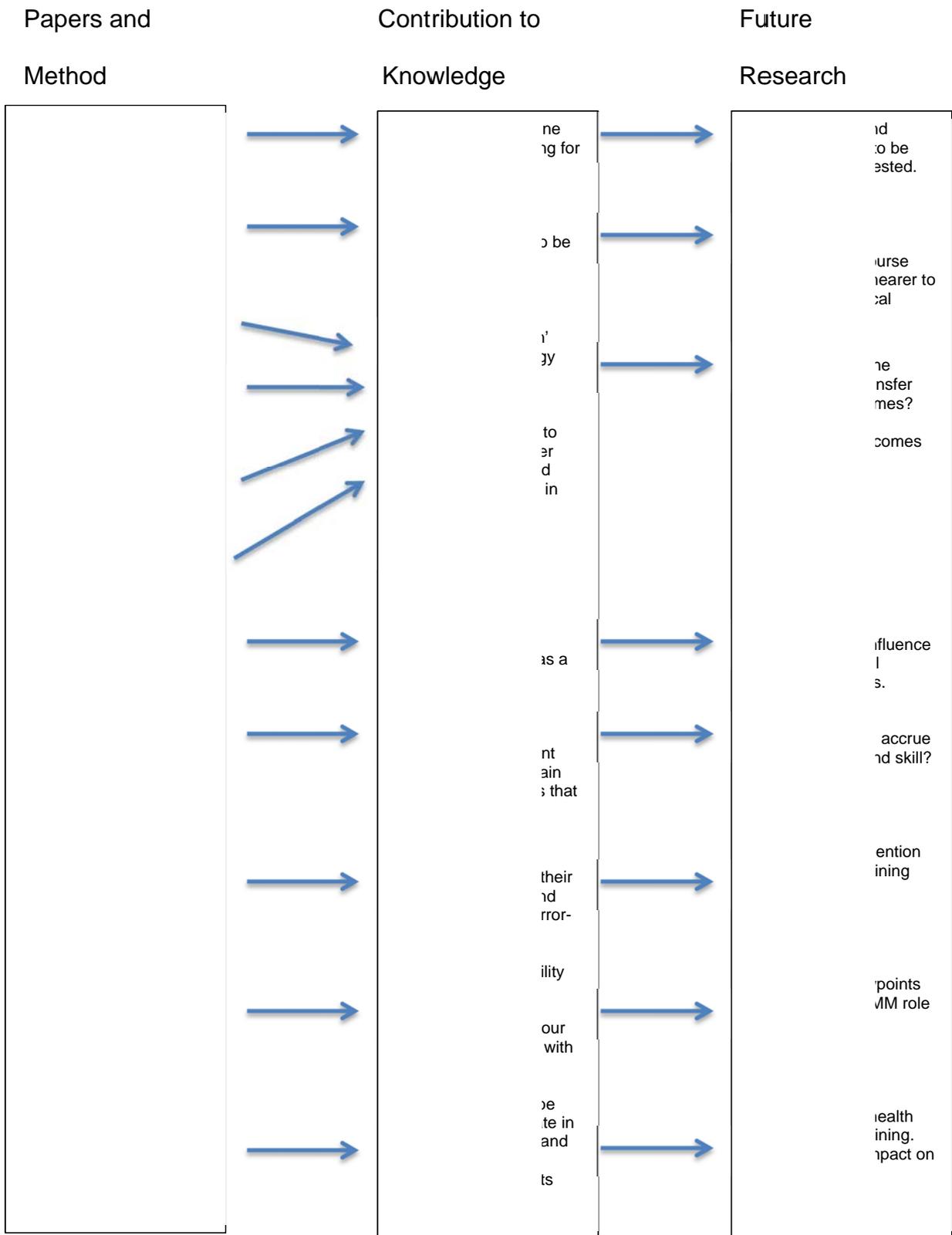


Figure 4.1 Findings from the thesis and beyond. The first two columns show the findings that can be disseminated from this thesis. The final column represents suggests what the future research priorities should be.

5.0 CONCLUSIONS: WHERE ARE WE NOW AND WHERE NEXT?

5.1 Main Findings and recommendations for practice and education

The results from the series of studies included in this research programme can be synthesised into recommendations for the future development of medicines management education, and training delivery designed to assist MHNs in how to improve their MM performance when working with psychotropic medication.

These recommendations can be categorised into the following areas:

A pathway that mirrors the MHN career trajectory and enhances their skills and knowledge, such as the stepped approach, can be effective in preparing the MHN for their MM role. In turn this can go some way to address the deficits in the bioscience content in the preregistration curriculum. Creating the opportunities for MHN and other nursing fields to be exposed to stand-alone MM learning opportunities, has a positive impact on their skills and knowledge development.

If the student identifies that the MM content has relevance to practice they are more likely to be motivated to engage in the learning opportunities afforded to them.

The use of a dedicated package of MM education and training, can aid the development of the MHNs and other nurses toward competence in their day-to-day practice. All aspects of the stepped approach were perceived overall by study samples, to be effective and the majority reported it had changed their practice positively. A combination of theoretical (for example psychopharmacology workbook), and more blended approaches (incorporating knowledge and skill components) in both a simulated (OSCE), and practice environments (competence framework) has been shown to be successful in facilitating the development in MM for MHNs.

The physical health wellbeing of the patient diagnosed with a mental health problem, has an unavoidable overlap with the prescription of psychotropic medication due to iatrogenic side effects. Opportunities such as the physical health workshops can impart the requisite knowledge and skills for the MHN to assess and provide care that could minimise or prevent a chronic life limiting condition occurring.

The education and training components of the stepped approach evaluated in this thesis has reportedly increased the confidence of MHNs, that they are competent in MM; this potentially could make a contribution to the prevention of medication errors.

If MM education and training content is developed collaboratively between Universities and healthcare providers, this creates the environment where knowledge and skills will develop.

5.2 What should be the next steps for research in this area?

The processes and procedures that are part of MM are complex and require the individual MHN, to have a sophisticated understanding and array of skills to work safely and competently. The preparation of the MHN for their MM role evaluated in this thesis, has only given partial proof of how the knowledge and skills of MHNs can be enhanced. Banning (2012) gives a useful background understanding as to how the thesis findings can be compared. Banning sets propositional knowledge (why), the how (process knowledge), knows why (conditional knowledge) and finally knowledge used in practice (functional knowledge). Evidence in the thesis shows how a psychopharmacological workbook was perceived to facilitate propositional knowledge (knows why). How the OSCE and competence framework was reported to give the MHN process (the how) and conditional knowledge (knows why). However, the real world validity of the findings of this thesis is questionable as there is no real proof of showing that the MwR stepped approach content or physical health workshops for example, transferred into the MHN MM performance (functional knowledge).

The major limitation of all the published findings presented in this thesis, is that none had shown any change in clinical practice and no outright influence on the outcomes of MM employed by MHNs. In essence, no clinical change reported in the studies is available. Thus any future initiatives in this important area of MHN practice need to include evidence that shows a clear impact of MM education and training in their early career, and how this transfers to the clinical context. Research designs which have a pre and post-test or compare the delivery of different MM education and training packages, (such as a randomised, cluster or case controlled trial) could address the real world validity (see Figure 4.1).

Developing the expertise of the MHN in MM should include the minimisation of error. The development of a study that evaluates a diet of interventions related to MM would also have a profound impact. Demonstrating the impact of a system approach between healthcare providers and HEIs, to the reduction of errors, could act as a model for other organisations to implement. Using a pre-and post-test experimental design to explore the extent of error, and if such a collaboration could increase skills and knowledge in MM as well as decrease the likelihood error's occurring.

A follow on to the MwR evaluation reported in this thesis, would be to investigate levels 3 and 4 of the stepped approach. Firstly, working with MHNs who had experienced steps 1 and 2, developing an advanced MM content (step 3), introducing psychological and adherence as central tenets for the MHN to use in clinical practice. Secondly, follow a cohort of MHNs who apply to become non-medical prescribers and evaluating if steps 1 and 2 were still relevant whilst developing as prescribers. A mixed method research design could capture the experiences of the intended sample; with single case study examples to give a detailed analysis about how each MHN developed their skills as prescribers.

A qualitative exploration that firstly includes an exploration of how MHNs accrue knowledge and skill in MM, could further the understanding as to where learning needs to be focused. Secondly,

investigating the MHN standpoint on the adherence-concordance continuum, and how this informs their MM work as well as relationship with the patient, could also provide a further insight into the MHN understanding of their MM role.

A study design using an RCT of physical health education and training for MHNs, and whether it results in improved outcomes for the patient, is also needed. The content of the training programme would have a strong element of MM focused on the detection and management of iatrogenic side effects from psychotropic drugs.

The involvement and collaboration of patients on future studies also needs to be included. Future evaluation of steps 1 and 2 might involve a qualitative design asking patients if they felt they were satisfied with the service they received (for example with the administration for medicine), and if they felt included and informed about the medication that is prescribed or administered.

The planning of any future research objectives needs to be prioritised. Thus when focussing on the suggested potential projects highlighted in Figure 4.1 the following is based on the need for improved clinical outcomes. Firstly a pragmatic RCT of error prevention, finding a way forward to prevent harm and promote the therapeutic potential of MM by MHNs takes priority. Secondly, MHNs as the largest professional workforce delivering interventions to support the patient with mental health problems, therefore an RCT to evaluate education and training of MHNs when delivering physical health care could make a difference to the poor morbidity and mortality outcomes for people with serious mental health problems. The remaining research for the future are important but can be planned and implemented over time to positively inform and influence the role of the MHN in MM.

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APPENDIX 1: CO-AUTHOR DECLARATIONS

APPENDIX 2: PUBLISHED STUDIES 1-11

2.1 Paper 1: Prescribing by mental health nurses: The UK perspective

2.2 Paper 2: Student experiences of medicines management training and education.

2.3 Paper 3: The Medicine with Respect Project-Phase 1: Implementing a pathway toward competency in medicines administration for mental health nurses.

2.4 Paper 4: Collaboratively planning for medicines administration competency: A survey evaluation.

2.5 Paper 5: Implementing a competence framework for administering medication: Reporting the Experiences of Mental Health Nurses and Students in the UK.

2.6 Paper 6: The Medicine with Respect Project: A stakeholder focus group evaluation.

2.7 Paper 7: Mental health and learning disability nursing students' perceptions of the usefulness of the objective structured clinical examination to assess their competence in medicine administration.

2.8 Paper 8: The perceptions of nurses towards barriers to the safe administration of medicines in Mental health settings.

2.9 Paper 9: Can student mental health nurses be prepared for medicines management?

2.10 Paper 10: Debating mental health nurses' role in medicines management.

2.11 Paper 11: Facilitating knowledge of mental health nurses to undertake physical health interventions: a pre - test/post - test evaluation.

APPENDIX 3: PSYCHOPHARMAOLOGY WORKBOOK

**APPENDIX 4:
OBJECTIVE STRUCTURED
CLINICAL EXAMINATION
-EXAMPLES**

APPENDIX 5:

**THE ADMINISTRATION OF
MEDICINE COMPETENCY
FRAMEWORKS**

