# A mixed-methods study of the impact of simulation-based education on the general practice clinical pharmacist in NHS Scotland.

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# A mixed methods study of the impact of simulation-based education on the general practice clinical pharmacist in NHS Scotland

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A thesis submitted in partial fulfilment of the requirements of Robert Gordon University for the degree of Master of Research

This research was carried out in collaboration with NHS Education Scotland and Highland and Islands Pharmacy Education and Research

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# DECLARATION

This thesis has been written by Lyndsay McFarlane Steel and has not been submitted elsewhere for a higher degree award. Lyndsay McFarlane Steel has undertaken the research with the assistance of a wider research team. All quotations have been identified by quotation marks and sources of information have been specifically acknowledged.

Signed: Date: 1 October 2024

*“Tell me and I forget, teach me and I remember, involve me and I learn”*

Benjamin Franklin

An American publisher, philosopher, scientist and inventor.

# ABSTRACT

Clinical decision making in healthcare is the process by which healthcare professionals make personalised prescribing and treatment choices for patient care using a combination of clinical evidence, patient preferences, and their own clinical expertise. Good clinical decision making requires confident and competent management of ambiguity and dubiety from the clinician and can lead to better treatment responses and increased patient satisfaction. Pharmacists are considered to have high levels of accuracy with regards to prescription checking, however as the profession advances, there is an increasing requirement for pharmacists to manage risk and clinical decision making.

This study was conducted in NHS Scotland in the General Practice (GP) setting with pharmacists working in patient-facing roles as independent prescribers (PIPs). It was evident that pharmacists qualified as PIPs were not making full use of their qualifications in clinical practice. Research has shown that pharmacists would benefit from more problem-solving, critical thinking and communication skills type learning: simulation-based education was identified as one learning tool to do this.

The aim of this research was to explore the impact of a Simulation-based Education (SBE) course on General Practice Clinical Pharmacists (GPCPs).

This study employed an initial set of quantitative data collection and analysis, using questionnaires, an adapted Tolerance of Ambiguity in Medical Students and Doctors (TAMSAD) scoring tool and qualitative analysis through interviews and focus groups with 30 PIP-GPCPs from across Scotland. A SBE course, containing four scenarios, was designed for PIP-GPCPs working at or towards an advanced clinical practice level.

Ethics approval was granted by RGU PALS Ethics Review panel.

Key findings align with the Kirkpatrick Model, selected due to its robust qualities in terms of evaluation of training, providing a structured insight into the following:

- Program improvement
- Optimisation learning including transferral of learning to behavioural and organisational results
- Demonstration of the value of the training to the participants and the organisation

Detailed statistical analysis of self-reported adapted TAMSAD score demonstrated a statistically significant difference between pre and post training values indicating that following attendance at SBE the GPCP tolerance of ambiguity increased.

Reactions, following attendance at the GPCP SBE course, were reported through course evaluation feedback and interviews. The reactions from participants were, in general, extremely positive. All participants reported that SBE should become an integral educational tool available in the GPCP learning pathway. Feedback also indicated self-reported advancements of knowledge, confidence, and experience for clinical practice. Operational areas were identified that required consideration and change to facilitate optimal service delivery by GPCPs. Participants described support for attendance at SBE training from employers as being generally positive, however, consideration of training needs and protected learning time (PLT) needed to be recognised and formally provided by the organisation / profession and supported by line managers. It was highlighted by participants that other healthcare professionals have PLT to undertake professional development.

In conclusion, the GPCP SBE course was received well by participants, effectively contributing to the learning and positive behavioural changes of the GPCP. Limitations include the small cohort size, use of non-validated tools, and adaptation of the TAMSAD tool without full psychometric validation in a range of clinician groups. This work highlights the benefits of providing SBE in Pharmacy education and training and the need for operational changes in the profession taking in to account the advances in clinical practice and impact on patients.

## Keywords

Simulation Based Education, Clinical Decision Making, Tolerance of Ambiguity, Pharmacy, Pharmacy Education, General Practice Pharmacist.

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And finally, I am going to dedicate this thesis to my best friend in the whole world who we lost half-way through my MRes, Tully my border collie. We have travelled the world together from Glasgow to Australia and back to Orkney. You have seen me through so much in the 12 years I was blessed to call you mine. I miss having you at my feet as my ‘study buddy’ but your wee sister Islay, our nutcase Australian Cattle Dog, is trying to fill in as you instructed … she just barks a bit much and Violet the cat keeps lying on the keyboard and typing ‘gibberish’!

# DISSEMINATIONS RELEVANT TO THIS WORK

Details of oral presentations, conference poster presentations and other work undertaken and results of the output from this project are provided below.

## Oral Presentations:

**SP3A Annual Conference, 23rd November 2022:** Development and Delivery of Simulation Based Education within NHS Scotland Pharmacy

**NES Annual Virtual Conference 27th and 28th April 2023:** The impact of Simulation Based Education on the Tolerance of Ambiguity of General Practice Clinical Pharmacists

**European Society of Clinical Pharmacy Symposium 31st October – 2nd November 2023:** A theory-based evaluation of a simulation-based education course for general practice clinical pharmacists: Effects on knowledge, confidence, and experience.

**Slovenian Association of Clinical Pharmacy, 7th May 2024:** The General Practice Clinical Pharmacist Independent Prescriber in Scotland

## Workshop Delivery:

**SP3A Annual Conference, 23rd November 2022:** Simulation

**SP3A Annual Conference, 17th November 2023:** Simulation Based Education

## Poster Presentations:

**Rethinking Remote Conference, 28th -29th April 2022:** Simulation Based Education: Enhancing learning opportunities for Remote and Rural General Practice Clinical Pharmacists

**European Society of Clinical Pharmacy Symposium 31st October – 2nd November 2023:** The impact of Simulation Based Education on the Tolerance of Ambiguity of General Practice Clinical Pharmacists

# Table of Contents

# ABBREVIATIONS

| ABBREVIATION | DESCRIPTOR |
|---|---|
| APF | Advanced Pharmacy Framework |
| CINAHL | Cumulated Index to Nursing and Allied Health Literature |
| ESRC | Economic and Social Research council |
| FGIN | Focus Group Identification Number |
| GMS | General Medical Services |
| GPhC | General Pharmaceutical Committee |
| GP | General Practitioner |
| GPCP | General Practice Clinical Pharmacist |
| HIPER | Highland and Islands Pharmacy Education and Research |
| IP | Independent Prescribing |
| IPA | International Pharmaceutical Abstracts |
| IQR | Interquartile Range |
| MeSH | Medical Subject Headings |
| MDT | Multidisciplinary team |
| NHS | National Health Service |
| NES | NHS Education for Scotland |
| O365 | Microsoft Office 365® |
| PIN | Participant Identification Number |
| PIPs | Pharmacist Independent Prescribers |
| PBSGL | Practice Based Small Group Learning |
| PI | Principal Investigator |
| RCGP | Royal College of General Practitioners |
| RPS | Royal Pharmaceutical Society |
| SCSCHF | Scottish Centre for Simulation Clinical Human Factors |
| SP3A | Scottish Practice Pharmacy and Prescribing Advisers |
| SBE | Simulation-based education |
| SERC | Social and Ethical Responsibilities of Computing |
| TDF | Theoretical Domains Framework |
| TAMSAD | Tolerance of Ambiguity of Medical Students and Doctors |

# LIST OF TABLES

**CHAPTER TWO**



**CHAPTER THREE**

# LIST OF FIGURES

**CHAPTER ONE**



**CHAPTER TWO**



**CHAPTER THREE**

# Chapter 1: Introduction

## 1.1 Background

### 1.1.1 Clinical decision making in health professional service delivery

Clinical decision making in healthcare refers to the process by which healthcare professionals make choices around patient care based through a combination of clinical evidence, patient preferences, and their own clinical expertise. It is a complex and dynamic process that plays a crucial role in ensuring the best possible outcomes for patients. Key components of clinical decision making include assessment, diagnosis, evidence-based practice, patient-centred care, risk-benefit analysis, ethical considerations, communication, and documentation (Wright et al. 2019) (NES 2023). The importance of clinical decision making in healthcare cannot be overstated. It is fundamental to delivering high-quality, safe, and efficient care. By honing their decision-making skills, healthcare professionals can better navigate the complexities of patient care, improve health outcomes, and contribute to the advancement of the healthcare field.

The importance of clinical decision making by the healthcare professional is multifaceted. Whilst clinical care of patients and decision making by clinicians is often supported by clinical guidelines and decision-making tools it is evident that no one patient is identical, no one clinical presentation is likely to be 100% the same. It is therefore important that prescribing and treatment choices, for example, can be personalised to the patient; this requires clinical decision making and can lead to better treatment responses and increased patient satisfaction (Collins and Varmus 2015). Clinicians are expected to follow the principles of realistic medicine set out in ‘Personalising Realistic Medicine’ (The Scottish Government, 2019 a) and ‘What works to support and promote shared decision making: a synthesis of recent evidence’ (The Scottish Government 2019 b). Patients are encouraged to be at the centre of the decision making and personalise their care which potentially adds another layer of complexity to the clinician’s ability to decide. Wright et al. state in their commentary that clinical decision-making skills are fundamental to the competency of healthcare professionals but are definite skills lacking in the pharmacy profession (Wright et al. 2019).

### 1.1.2 Clinical decision making in healthcare professional education

Clinical decision making is taught to healthcare professionals through a combination of theoretical education, practical training, and experiential learning. The process is designed to develop critical thinking, problem-solving skills, and the ability to integrate knowledge from various sources.

Whilst it is widely known that clinical decision making is required for healthcare professionals to ensure safe, effective and timely provision of care to patients, there is little information on how it is embedded into healthcare education. Undergraduate degree programmes for medicine, nursing and pharmacy all currently adopt teaching methods such as lectures, case-based learning, problem-based learning, experiential learning, and mentorship however, what is less clear is how much of these aspects include the need to discuss or make complex clinical decisions.

In nursing, clinical decision making is taught in undergraduate courses to their students however to what extent is unclear. A recent mixed method, multisite study, in the United States, explained that whilst clinical decision making is an integral aspect of the nursing profession, little is known about how students actually learn this skill (Phillips et al. 2021). Nursing students should be confident and competent to make effective clinical decisions and the education they receive should help to develop these skills; however, more research on ways to improve this education is required (Ilaslan et al. 2023). NES have produced a short overview on their 'effective practitioner' website for nurses, midwives and allied health professionals in practice which covers clinical decision making. The document splits the overview into the following elements (NES, Effective Practitioner):

- *"The principles of clinical decision making;*
- *The core skills of decision making;*
- *The decision making process;*
- *The power of shared decision making."*

In medicine, it is known that doctors are frequently faced with difficult and complex clinical decisions and the ability of the doctor to make clinical decisions is therefore a crucial element of their role as a clinician (McGregor et al. 2012). Little recent evidence can be found on how doctors are however trained specifically to make clinical decisions.

It is recognised that often, pharmacists are ideally placed in the workforce to clinically manage certain patient cohorts or clinical presentations however to do this safely and effectively the pharmacy education and training model needs to move away from protocol

based diagnostic and treatment pathways into a more individual patient focussed method of assessment and treatment. For this however, pharmacists will need to receive more education and training the field of clinical decision making (Rutter and Harrison 2020). The curricula in most pharmacy schools within the UK does not specifically educate the undergraduate students in the area of clinical decision making although elements are incorporated into their teaching. Recommendations around the need for Pharmacy educators to “revise their curricula to incorporate clinical reasoning skills from day one of the undergraduate degree” were made by Rutter, Harrison and Mills in a 2022 issue of the Pharmaceutical Journal (Rutter et al. 2022). This need for a greater focus to be placed on the important education and development of clinical decision-making skills has also been recognised and hence included in the GPhC standards for initial pharmacy education and training (GPhC 2021).

A study in Canada makes some conclusions around the main themes regarding challenges in pharmacy students' clinical decision making were relational factors, teaching and learning, degree of certainty, and personal characteristics. These themes highlight elements that influenced decision making prior to the final stage, where students determined whether, or not, they were prepared to make a decision (Charrois 2020). It has also been recognised that complex clinical decision making is a skill that will require ongoing learning and improvement throughout the career development of the pharmacist. This will involve the pharmacist progressing from novice (newly qualified) where the pharmacist should be able to make less complex, simple decisions through to expert (advanced / consultant) where the pharmacist should be able to make highly complex clinical decisions, managing the balance between risks, benefits and consequences (Sellers and Gibson 2022).

### 1.1.3 Tolerance of Ambiguity

It is important to note that clinical decision making requires confident and competent management of ambiguity and dubiety from the clinician. This ambiguity and uncertainty may arise for several reasons such as lack of knowledge, access to diagnostic aids and atypical patient presentations, for example. The initial concept of *‘intolerance of ambiguity as an emotional and perceptual personality variable’* was developed by an American psychiatrist, Else Frenkel-Brunswick in 1949 (Frenkel-Brunswick 1949) and has since been used in several studies relating to medicine and decision within.  Jason Hancock et al. recognised that ‘tolerance of ambiguity’ was a known phenomenon for medical students and doctors impacting on the choices and decisions they make or conversely don’t make, which

ultimately can impact on both patient outcomes and satisfaction but also the health and wellbeing of these medical professionals in addition to their choice of specialty and often their ability to remain within the profession (Hancock et al. 2014). The researchers also realised that the many tools that existed to measure this 'tolerance of ambiguity' were not of sufficient quality to fully obtain answers required to improve outcomes (Hancock et al. 2014). The medical profession has recognised that improvement in pedagogical methods is required to increase the tolerance of ambiguity in medical students. With this, Hancock et al. produced the 'Tolerance of Ambiguity in Medical Students and Doctors' (TAMSAD) tool, as a validated tool which contains 29 statements requiring an answer on a Likert scale from strongly agree to strongly disagree (Hancock et al. 2014). Whilst Luther and Crandall suggest that the more tolerant the medical student or doctor is to ambiguous clinical situations the higher the patient and physician satisfaction is (Luther and Crandall 2011), a response to the editor by Jason Hancock and Karen Mattick, also advises the medical educators to closely monitor for any potential negative outcomes of increasing the tolerance of ambiguity in the profession (Hancock and Mattick 2012).

Whilst it is important to recognise that 'risky choices' and 'tolerance of ambiguity' differ, it is equally important to understand why. Taking risk can be described as deciding against known odds whilst tolerating ambiguity can be described as deciding with unknown odds (Sherman 1974). In a joint evaluation of pharmacy teams in GP practice (Stewart and Bennie 2018), conducted in 2018 by The University of Strathclyde and Robert Gordon University a comment by one GP who partook in the questionnaire was:

*"There is a big cultural difference…approach to risk is radically different from GP and pharmacist backgrounds…was biggest issue…we are trained in it, we're honed in it, spend years learning about decision making…that's something pharmacists aren't trained in…they are more risk averse".*

This statement, while referring to 'risk' could also align with the differing tolerance in ambiguity between the General Practitioner (GP) and the General Practice Clinical Pharmacist (GPCP). When making clinical decisions relating to patient care, managing clinical risk is required and this is where it can become tricky for the pharmacist. Pharmacists, as healthcare professionals, are known for their level of accuracy – the correct drug, the right condition, the correct patient, the right dose; suggesting there are no grey areas in the profession (XRAYSER 2015). Is the pharmacist ready to manage clinical risk, making autonomous decisions where there isn't an exact answer?

### 1.1.3 The changing role of the pharmacist

The role of the pharmacist, as a clinician, is developing; increasingly moving from a medication supply function to a clinically focused, patient facing professional activity with the requirement for managing clinical risk and skilful decision-making being a priority (Waghorn et al. 2021) (Duffull et al. 2017).

In 1990 Hepler and Strand provided innovative, yet critical, insight into the need for the pharmacy profession to adapt and change allowing for the increased opportunity and responsibilities for safe and effective pharmaceutical care provision. (Hepler and Strand 1990). In 2001, The Audit Commission for the National Health Service (NHS) England and Wales produced 'a spoonful of sugar, medicines management in NHS hospitals' (The Audit Commission 2001). The audit report findings included noting that an element of the pharmacy profession are content to continue in the more traditional model of dispensing medications and carrying out standard therapeutic drug monitoring – and the word *''pharmacy conjures up in their minds a room in a hospital"* as opposed to a patient- focused, clinical service where the pharmacist is a clinician providing patient facing clinical care and an important member of the multidisciplinary healthcare team (The Audit Commission 2001). The report highlighted that those members of the clinical team, including pharmacists, need to work as a cohesive multidisciplinary team to ensure the safe and efficacious delivery of healthcare and medicines management (The Audit Commission 2001).

In Scotland, like many other countries, the changing role of the pharmacist can be attributed to several factors, including advancements in healthcare, changing patient needs, and healthcare policy developments. The need for a multidisciplinary approach to health and social care, to ensure better patient outcomes whilst also looking after the staff working in the system, is well recognised in the NHS, (NHS England 2020) and more specifically in the primary care setting (Scottish Government, 2018). The Scottish Burden of Disease Study, published in 2022, forecasts the "future burden of disease" in Scotland over the next 20 years (The Scottish Public Health Observatory 2022.). It is predicted that there will be a 21% increase in the burden of disease over the next 20 years which, with the burden coming mainly from long term conditions such as cardiovascular disease and respiratory disease and the clinical care provision for these patients will sit within the Primary Care service i.e. General Practice.

### 1.1.4 Key legislative changes, educational reform, and advances in career framework in the Pharmacy profession

In 2003 changes to legislation across the UK allowed for Pharmacists to undertake training, qualify, and hence practise as supplementary prescribers (Baquir et al. 2012). Legislation was further amended in 2007 to allow for the pharmacist practicing in the UK to become a Pharmacist Independent Prescriber (PIP) with a letter of confirmation arriving to all NHS Scotland boards on 23rd December 2007 detailing the changes and procedural steps required for introduction of this service (Scottish Government 2007).

In 2013 The Royal Pharmaceutical Society (RPS) launched the Advanced Pharmacy Framework (APF) (RPS 2013) with the aim to provide pharmacists some clarity in their development and enhance their ability to deliver safe, efficacious healthcare outcomes with the help of a framework to do so. In the same year, the Scottish Government released their vision and action plan for Pharmacy called 'Prescription for Excellence' (The Scottish Government 2013). The vision was: *"All patients, regardless of their age and setting of care, receive high quality pharmaceutical care from clinical pharmacist independent prescribers. This will be delivered through collaborative partnerships with the patient, carer, GP and the other relevant health, social care, third and independent sector professionals so that every patient gets the best possible outcomes from their medicines, and avoiding waste and harm."* This also set out that all pharmacists should be qualified PIPs by 2023. Supporting the expanded clinical role of the pharmacist are Scottish Government papers such as 'Achieving excellence in pharmaceutical care: A strategy for Scotland' (The Scottish Government 2017). This changing role of the pharmacist, from their increased multidisciplinary team (MDT) involvement to their increased clinical service provision, is not a new phenomenon and from more recent literature is still evolving to this day (John 2018) (Forsyth et al. 2023).

As a result of the advances and changes to Pharmacists' roles, responsibilities, and scope of practice in recent years, it is expected that pharmacists should be able to work autonomously, in patient facing roles within the MDT (GPhC 2021). As a result of this expectation, is recognised that the training pharmacists receive / undertake, from undergraduate through to post graduate level, needs to move in line with these changes and that more traditional, teaching methods in the pharmacy undergraduate and post graduate training models require review and change (GPhC 2021).

In the future it will be crucial that student pharmacists feel supported and competent, following initial education and training, upon registration to enter the workforce as

independent prescribers. The General Pharmaceutical Committee (GPhC) have recognised this and by the introduction of major reforms have updated the standards for initial education and training for pharmacists with the aim to provide all future pharmacists with a training pathway that enables them to be clinicians involved in the health and wellbeing of the patients and the public from day one as a qualified pharmacist. It is documented that the implementation of the GPhC standards will generationally be transformative in the education and training of pharmacists to ensure they can, immediately post registration, play a significant patient facing clinical role in the healthcare setting; safely, effectively, confidently, and competently as independent prescribers. Forsyth and Rushworth (Forsyth and Rushworth 2021) comment that the 2021 RPS Core Pharmacist Curriculum aims to standardise the development of advanced practice skills of the pharmacy workforce in a positive direction. (RPS 2013), (Burns 2018).

### 1.1.5 Barriers to changing the role of the pharmacist

NHS Education for Scotland (NES) regularly review the percentage of qualified independent prescribers who actively use their qualification and the most recent figures, from 2020, show that only 53% of qualified Pharmacist Independent Prescribers (PIPs) working in General Practice patient facing roles actively prescribe (NES 2021 b). It is unclear the exact reasons behind this, however it has been reported that several pharmacists lack confidence in their prescribing ability which leads to them not using their Independent Prescriber (IP) qualifications (GPhC 2016).

A review of GP's perceptions of pharmacists' ability to work autonomously indicated that GP's believe pharmacists are risk averse (Rokib 2021). Forsyth and Rushworth question where the UK pharmacy profession is currently in its journey towards developing pharmacists in to more rounded, clinically confident, and competent clinicians enabling them to work at the higher level of advanced clinical practice; demonstrating ability to manage risk, uncertainty, and complexity, autonomously. (Forsyth and Rushworth 2021).

On exploring what the barriers are Rosenthal et al. in fact question if pharmacists are themselves the route of the barrier to change in pharmacy practice (Rosenthal et al. 2010). Additional barriers have been identified through recent research with a scoping review by Mingming et al. in 2019 (Mingming et al. 2019) listing the following emerging themes:

- Inadequate training regarding diagnostic knowledge and skills
- Inadequate support from authorities, employers, other medical professionals, and the public
- Insufficient infrastructure support and technology resourcing
- Insufficient funding/reimbursement
- Lack of relevant governance procedures to support
- Poor awareness among stakeholders
- Difficulties making decisions about prescribing
- Concerns about potential conflicts between multiple roles of the pharmacist
- Perceived professional encroachment of medical dominance

### 1.1.6 The General Practice Clinical Pharmacist

The GPCP is a relatively new job role in the pharmacy profession. The GPCP should be a qualified PIP with the necessary confidence and competence to work in a patient facing role. Based on the RPS APF, NES developed the GPCP Advanced Competency & Capability Framework in 2016 (NES 2016) in collaboration with practicing expert pharmacists working in the general practice setting, GP's, RPS and the Royal College of General Practitioners (RCGP). This has subsequently been updated in 2021 (NES 2021 a). Both are accessible through the TURAS learn portal for registered pharmacists in NHS Scotland.

The 2018 General Medical Services (GMS) contract (The Scottish General Practitioners' Committee of the British Medical Association in conjunction with Scottish Government 2018) included the term 'Pharmacotherapy' with an explanation of the expectations of what the addition of a pharmacotherapy service will achieve in GP practice based on the knowledge that multidisciplinary team working is key to improving patient care whilst also reducing GP workload. The document detailed that *"GP Pharmacists will deal with acute and repeat prescribing and autonomously provide Pharmaceutical care through medication and polypharmacy reviews".* (The Scottish General Practitioners' Committee of the British Medical Association in conjunction with Scottish Government 2018). This service was named 'Pharmacotherapy' and is currently funded through the Primary Care Improvement Fund monies allocated by Scottish Government. In 2015, £16.2 million was provided by Scottish Government to recruit up to 140 pharmacists to work in GP practice and in 2017/18 an additional £4.2 million was added to this funding, the detail in this additional funding included that GP practices should have access to pharmacists with advanced clinical skills.

Figure 1.1, on page 21, is taken directly from the 2018 GMS contract in Scotland paper and details the expectations both Scottish Government, GP's and Pharmacy Leads would have of their pharmacy teams in GP Practice in Scotland (The Scottish General Practitioners' Committee of the British Medical Association in conjunction with Scottish Government 2018). Whilst the Advanced GPCP is expected to be able to input to and have capability of delivering most services detailed in Figure 1.1 it is important that the GPCP is provided with adequate education and training to provide Level 3 (additional specialist) services as a PIP working in GP practice.

| CORE AND ADDITIONAL PHARMACOTHERAPY SERVICES | | |
|---|---|---|
| | **Pharmacists** | **Pharmacy Technicians** |
| **Level one (core)** | • Authorising/actioning[15] all acute prescribing requests<br>• Authorising/actioning all repeat prescribing requests<br>• Authorising/actioning hospital Immediate Discharge Letters<br>• Medicines reconciliation<br>• Medicine safety reviews/recalls<br>• Monitoring high risk medicines<br>• Non-clinical medication review<br><br>Acute and repeat prescribing requests includes/ authorising/actioning:<br>• hospital outpatient requests<br>• non-medicine prescriptions<br>• installment requests<br>• serial prescriptions<br>• Pharmaceutical queries<br>• Medicine shortages<br>• Review of use of 'specials' and 'off-licence' requests | • Monitoring clinics<br>• Medication compliance reviews (patient's own home)<br>• Medication management advice and reviews (care homes)<br>• Formulary adherence<br>• Prescribing indicators and audits |
| **Level two (additional - advanced)** | • Medication review (more than 5 medicines)<br>• Resolving high risk medicine problems | • Non-clinical medication review<br>• Medicines shortages<br>• Pharmaceutical queries |
| **Level three (additional - specialist)** | • Polypharmacy reviews: pharmacy contribution to complex care<br>• Specialist clinics (e.g. chronic pain, heart failure) | • Medicines reconciliation<br>• Telephone triage |

*Figure 1.1: Core and additional pharmacotherapy services*.*

**Abstracted from: The 2018 General Medical Services Contract in Scotland, Joint statement of policy by The Scottish General Practitioners' Committee of the British Medical Association in conjunction with Scottish Government. Page 31. (The Scottish General Practitioners' Committee of the British Medical Association in conjunction with Scottish Government 2018)*

## 1.2 An introduction to Simulation-based Education (SBE) as an Educational Theory and the relevance to this research

An educational theory is a set of principles or ideas that guide the understanding, practice, and development of education. Educational theories help those developing and delivering education and provide a framework for understanding how effective the education provision is for those individuals involved in learning. Educational theories can help to inform instructional strategies, curriculum design, and educational policies. Simulation-based education (SBE) is an educational technique which provides a dynamic and effective approach to learning by offering realistic, experiential scenarios in a safe and controlled environment. SBE is underpinned by several educational based theories; andragogy, behaviourism, constructivist, experiential learning, , and social cognitive theory to name a few. Together, these education-based theories collectively inform the design, implementation, and evaluation of SBE with the aim of promoting active learning, critical thinking, skill acquisition and retention.

### 1.2.1 Andragogy

Andragogy is defined as *"the theory, methods, and activities involved in teaching adult learners"* (Cambridge Dictionary). In Greek, the word andragogy translates to 'man-leading'. This type of learning differs from other stages of learning such as nursery or school learning based on the age of the learner. The importance of this education theory in the context of this research is that the learners undertaking the SBE in the GPCP cohort and also in any forms of Undergraduate and Post Graduate learning will be adults aged 16 or over. In 1980, Malcolm Knowles made 4 assumptions on the characteristics of adult learners (Knowles 1980) and in 1984 added on the 5$^{th}$ assumption (Knowles 1984):

1. Self-concept – as an individual ages they mature and becomes more independent in their thinking and hence personality.
2. Adults Learner Experience – as an individual grows and matures, they gain in experiences and hence learning resources
3. Readiness to Learn – adult learners are more likely to want to learn in areas that they think will benefit them, helping them to accomplish tasks

4. Orientation to learning – in a similar way to readiness to learn, this describes how the adult learner moves into a more problem-solving way of learning. SBE can be very useful in this learning characteristic
5. Motivation to learn – this characteristic relates to adult relying on internal motivations in their learning journey as opposed to external motivations, such as parents and teachers' direction and expectations.

### 1.2.2 Behaviourism

Behaviourism is a learning theory that focuses on how the learner learns through their conditioned interactions with the environment, i.e. how the learner responds to environmental stimulus. Behaviourism is an observational learning theory as opposed to one which relies on internal processes such as the learners internal thinking or emotional feelings. Relating this education theory to SBE and this research, behaviourism could explain why, when the 'simulated patient' calms down following a successful intervention by the learner that both the learner and the observers of the SBE are likely to learn from this and utilise this learning to make positive behavioural changes in similar real-life scenarios for successful outcomes.

### 1.2.3 Constructivism

Constructivism is a theory of knowledge. It can be described as an epistemology (Ultanir 2012) (Ross 2021), a word derived from the Greek word 'episteme' meaning knowledge and 'logos' meaning reason. Constructivism can be described as the individual learner actively constructing their knowledge through a continual process of building upon what they already to know. The learner uses experiences and learning to build their knowledge in an active way. When it comes to SBE it is important to ensure the learning environment is an authentic / real to life as possible. In SBE the term 'high-fidelity' relates to the level of realism, degree of accuracy, and credibility relating to the equipment used in and setting of the scenario and the scenario itself (Carey and Rossler 2023). By making the SBE as real to life as possible the constructivist learner will be able to build on their knowledge in a way that will make it more realistic and consistent with reality (Ross 2021).

### 1.2.4 Experiential Learning Theory

David Kolb established the experiential learning theory, which incorporates many constructivist concepts, in the 1980's (Kolb 1980). Kolb bases this theory on the fact that the learner will enhance their knowledge when they combine their actual experiences (concrete experiences), reflect on these experiences (reflective observation), learn from their experiences (abstract conceptualisation), and then try out what they have learnt (active experimentation). Experiential learning is used regularly in healthcare to develop the learner further to practice safely and effectively. SBE can include all 4 stages described by Kolb; the learner has the opportunity to gain experience from the scenario (the concrete experience), reflect on their experiences of the scenario through self-reflection and also during the active de-brief session (reflective observation), can learn from their experiences when back in the workplace and relate the scenario to another experience / scenario in the workplace (abstract conceptualisation) and then use their learning from the SBE in the workplace (active experimentation). The active experimentation phase of the cycle can also relate to 'practicing' a new lesson learnt in the safe environment of SBE.

### 1.2.5 Social Cognitive Theory

Social cognitive theory was introduced as an educational learning theory by Bandura in 1986 (Bandura 1986). Bandura draws from the behaviourist approach and the cognitive approach where environmental stimulus influences behavioural changes and, where thought processes and implementation of learning, respectively. The social cognitive theory is based on the premise, in a social context, that the learning occurs from a dynamic and mutual interaction of the person, the environment and behaviours. In SBE it is important to ensure there is an interaction between the person, the environment and behaviours, i.e. the learner's values, the simulation environment, and the learning actions undertaken. It is therefore key to the success of the SBE that the learners are provided with clear learning objectives, appropriate environments for the simulation scenario and the de-brief, and that learners can interact with each other collaboratively, efficiently and effectively.

SBE is particularly valuable in fields where hands-on experience is crucial for competence and where the consequences of errors can be significant. Looking closely at the description for SBE: SBE is *"the imitation or representation of one act or system by another"* and *"serves as a bridge between classroom learning and real-life experience"* (Society for Simulation in

Healthcare 2021). There are many advantages of simulation training, such as improving clinician confidence whilst removing risk to patients and reducing healthcare costs (Society for Simulation in Healthcare 2021) (Aggarwal et al. 2010).

Simulated learning takes its origins from the aviation industry when in 1910 the flight simulator was invented (Henry 2018). Throughout the 20th Century simulation training has evolved and adapted for many professions where it is safer to 'practice' the skill in a simulated environment which is as close to reality as possible. From healthcare to aviation, military, and law enforcement professions, SBE is used widely, where risks are complex and costly to lives and budgets, should testing in a real-life environment be carried out. Whilst simulation-based training / education has been utilised within healthcare settings, such as medicine (Yu So et al. 2019) and nursing (WHO 2018), for a number of years to enhance many skill sets within the workplace including clinical, procedural, communication, team working and leadership skills, it is still a relatively new and innovative pedagogical method used in the NHS Scotland Pharmacy sector. It has been recognised that Simulation-based Education can no longer be an exception to the rule when it comes to training within the nursing profession and there is significant appreciation that it should in fact be included in all stages of the learning curriculum for nurses (Aebersold 2018).

Practical, workplace learning is an essential component in education and training to ensure clinicians gain appropriate, relevant, and effective knowledge and skills to work safely and effectively in the clinical, patient facing environment (NES 2019). As far back as 1892 William Osler is quoted as saying:

*"He who studies medicine without books sails an uncharted sea, but he who studies medicine without patients does not go to sea at all"* (Varley and Easton, 2020).

Furthermore, with reference to the training of medical students in The Netherlands and the UK, Tim Dornan discusses workplace learning and the differences between their learning opportunities (Dornan 2012). This article explores the conflicting choices between participation and avoidance of the clinical task that the medical student faces during work placed learning; the risks associated with learning by doing could result in patient harm however conversely avoidance of the task due to clinician fear of harm can result in a poor clinician learning experience.

Based on Miller's Pyramid of clinical Skills / competence / performance (Miller 1990) and it's mention of SBE, aligning with the 'shows how' block, in 'The Essential handbook for GP training and education' (Mehay and Burns 2009) one would ask why the GPCP should not receive similar training opportunities. With the advancements of the Advanced Practice Pharmacist Career Pathway (RPS 2013), (NES 2020) and development of the NHS Scotland

Advanced GPCP Career Pathway (NES 2021 a), it is important to consider how SBE, to improve clinical decision-making skills, could represent an exceptionally useful educational tool throughout the pharmacist's career. The benefit of SBE to improve clinical decision-making skills in nursing students is well described by Abdulmohdi and Mcvicar in 2023, showing that the nursing students learnt different clinical decision making skills during the SBE scenario and the de-briefing elements (Abdulmodhi and McVicar, 2023). SBE could be an ideal method of learning to develop such skills and is therefore important to explore the benefits to ensure appropriate educational tools are used at appropriate stages of the pharmacist's learning pathway. Depending on the conclusions drawn from this research and other research projects in areas such as SBE courses provided in undergraduate pharmacy education within NHS Scotland, SBE may well follow suit within the pharmacy profession from undergraduate level through to advanced practice.

## 1.3 A simulation-based education course designed specifically for General Practice Clinical Pharmacists

NES have recognised the need for changes in education and training for the advanced / advancing pharmacist and have supported pilot research in SBE during the pre-registration, now Foundation Training, year and are working closely with Strathclyde and Robert Gordon Universities in this area. SBE is one of the 'educational tools' added to the learning pathway for the GPCP and should complement the work currently underway in the undergraduate initial education and training phase of the pharmacist.

The education and development team at Highland and Islands Pharmacy Education and Research (HIPER) are well established and designed, developed, and delivered a simulation training day pilot session, in collaboration with NES, to a group of general practice clinical pharmacists (Rushworth et al. 2021).

This SBE training course pilot involved ten scenarios where participants put clinical, communication and decision-making skills into practice across a range of clinical presentations commonly encountered in primary care, including:

- diagnosis
- condition management
- end of life care

Given that this first pilot was so well received (Rushworth et al. 2021), NES then rolled out the access to it. The GPCP SBE course being described was the focus of this research project. To enrol on this SBE course participant pharmacists had to be working in patient facing roles within GP Practice, have their Pharmacist Independent Prescribing Qualification and have completed the NES Core Clinical Assessment Skills Course and Consultation Skills Course and finally had to be utilising or planning to utilise the learning in active practice. The SBE course, which this research project focussed on, was designed to give GPCPs the opportunities to practice their clinical and consultation skills with simulated patients in a safe environment.

## 1.4 Rationale for this research

Data obtained from the GPhC indicates that the number of qualified PIPs has risen exponentially in the UK between 2016 and 2020 from 2,781 to 8,806 respectively (Mills et al. 2022). This research relates to the GPCP cohort working as PIPs in general practice in Scotland. Based on a capture of the workforce survey reported by the Scottish Practice Pharmacy and Prescribing Advisers ($SP_3AA$) Leadership group to end April 2022 there were 664 whole time equivalent of this GPCP cohort ($SP_3AA$ 2022).

The publication in 2018 of the new General Medical Services (GMS) contract (The Scottish General Practitioners' Committee of the British Medical Association in conjunction with Scottish Government 2018) with Memorandum of Understanding 2 updates (GMS Contract Implementation for Primary Care Improvement 2021) in Scotland gives rational behind why the GPCP needs to be able to function at a clinically confident and competent level in the current NHS Scotland GP practice system: to be able to function as advanced pharmacists in the general practice setting the GPCP requires to have both competence and confidence to practice autonomously in patient facing roles, managing risk, uncertainty and complexity.

When considering what educational tools may benefit the Advanced / Advancing GPCP to improve and enhance their ability to work as a GPCP in delivering high quality, safe and efficacious care to patients within general practice in NHS Scotland, SBE was identified as one of the tools which may be useful. To ensure SBE training is worthwhile, to the participant, the employer / organisation, and the patient, it is vital that the pharmacist then goes on to use their qualifications and skills in clinical practice signifying why the evaluation of SBE courses and their benefit is important. It is clear change is needed to meet the demands of the service and updates to the pharmacy profession. McGaghie et al. 2016

state: *"simulation technology is a key contributor to quality health professions education; the integration of simulation into existing curricula is challenging; more and better research is needed to document educational effectiveness, and outcome measurement needs improvement."* This helps to explain why, although it is known that SBE could be a useful tool for clinicians, within their educational program, it is important to establish the true value the SBE brings to the GPCP. As aforementioned, a number of changes have been implemented to help drive the profession forwards to assist the pharmacist in their changing roles and responsibilities in General Practice such as the introduction of Practice Based Small Group Learning (PBSGL) for Pharmacists (Waghorn et al. 2021) Research has shown that pharmacists would benefit from more problem-solving, critical thinking and communication skills type learning (RPS and RCGP 2021).

## 1.5 Aim

To explore the impact of a Simulation-based Education (SBE) course on General Practice Clinical Pharmacists (GPCPs).

## 1.6 Objectives

Objectives are aligned with the Kirkpatrick Model Levels 1 to 3 (Kirkpatrick and Kirkpatrick 2016). An outline of this is provided in section 2.1.2 below.

**Objective 1:** Reaction (Kirkpatrick Level 1). To evaluate the views of GPCPs on how engaging, favourable, and relevant the SBE course was.

**Objective 2:** Learning (Kirkpatrick Level 2). To evaluate the effect of the SBE course on the participants perceived changes in knowledge, confidence, experience, and skills.

**Objective 3:** Behaviours (Kirkpatrick Level 3). To evaluate how SBE affects behaviours of the participants in relation to the tolerance of ambiguity.

**Objective 4:** Overall qualitative review of Interviews (Kirkpatrick Levels 1-3). To evaluate the reactions of the participants following attendance the SBE course aligning with Level 1 of the Kirkpatrick Model (Kirkpatrick and Kirkpatrick 2016) of research whilst also reviewing the overall effect the SBE course had on the participants in levels 2 and 3 of the Kirkpatrick Model (Kirkpatrick and Kirkpatrick 2016), their learning and behavioural changes.

# Chapter 2: Methodology and Methods

## 2.1 Literature Review

An extensive literature search was carried out in order to collate the literature in relation to this topic area to inform the introduction above in Chapter 1. The following three data bases were used:

1. Cumulative Index to Nursing and Allied Health Literature (CINAHL)
2. International Pharmaceutical Abstracts (IPA)
3. Medline

An initial concept map, provided in Appendix 1 was developed and agreed with the supervisory team.

**Table 2.1**: Literature Review outline

| | **Eligibility Criteria** | **Exclusion Criteria** |
|---|---|---|
| **Date range** | Published between the year 2000 until 1st April 2022 | Work published before the year 2000 |
| **Population** | Healthcare professionals (Pharmacy, Medical and Nursing) | • Non-medical or non-healthcare related simulation<br>• Computerised simulation<br>• Non-relevant simulation |
| **Concept** | • Consider validated tools used to evaluate SBE<br>• Consider Validated tools that can be used with the Kirkpatrick Model | • Studies that use experimental tools not with full validation<br>• Articles not related to simulation<br>• Articles considered non-relevant to project for any other reason |
| **Context** | • Worldwide<br>• Primary Care / Community Care / General Practice | • Sectors other than Primary Care can be considered for exclusion due to research focus area |
| **Language** | English | Papers fully or partially in other languages due to no resource for translation |
| **Evidence Type** | Original Papers | Other less robust evidence sources excluded to allow focus on the highest value evidence. |

As a result of this search on EBSCOhost a total number of 1090 papers were identified from Cumulated Index to Nursing and Allied Health Literature (CINAHL), International Pharmaceutical Abstracts (IPA), and Medline databases which were broken down to 394, 16 and 680 respectively. The search aim was to carry out a comprehensive review to scope, collate and characterize the diverse international literature around validated tools used for the data collection and hence evaluation of SBE courses for the education and training of healthcare professionals in community / primary care based in general practice. Core terms were discussed with the research supervisors and once finalised those agreed core terms which were: 'Simulation', 'Healthcare', 'General Practice', and 'Evaluation'. Sub-terms and Medical Subject Headings (MeSH) terms were also discussed and agreed by the researcher and research supervisors and then included under each core term to allow for more refined searching of literature. Searches were saved on the EBSCOhost platform and organised using RefWorks and Excel. All duplicates were removed and a review of article title and abstract then allowed for articles to be divided in to 'include', 'exclude' and 'unsure'. Exclusion criteria was discussed and decided between the researcher and research supervisors prior to the literature review to ensure consistency of exclusion. Following removal of duplicates there were 1059 articles to be screened. Once all 1059 articles were screened the researcher then read all the articles which fall in to the 'include' group, in full, at which point there was additional exclusion of articles. The researcher also chose to categorise any relevant SBE articles in the secondary healthcare setting to the 'unsure' group and reviewed these in case of any relevant information they may provide. Any articles the researcher was still unsure of were discussed with the research supervisors to ensure nothing of relevance was missed.

## 2.2 Research approaches

### 2.2.1 Methodological Approaches

Based on the Saunders Research Onion (Figure 2.1) research philosophy, as the methods collect data at various times throughout the research study, this mixed methodology by sequential priorities of quantitative methodology initially followed by qualitative methodology in the final stages of the data collection (Saunders et al. 2007). A combination of objectivism through quantitative data collection and both constructivism and interpretivism through focus group analysis (Creswell, 2009); based on the SBE course training which will be delivered looking to impact upon the GPCP's who participate in the training and on the idea that the inclusion of SBE training in GPCP training should impact upon their abilities to confidently

increase their prescribing activity, respectively. Pragmatism concentrates on the link between theory and practice and confirms that both objectivism and constructivism can be used in research to achieve the same outcomes / solve the same problems (Creswell, 2009). Interpretivism is an ontological belief where multiple realities, through lived experience and interactions with others, are constructed. The SBE is a lived based experience that involves significant interaction with both the simulation environment, patient(s), other healthcare professionals and with peers in the de-brief session.

This mixed method design which includes quantitative and qualitative i.e., use different methods to answer the same question by collecting data using questionnaires (quantitative) and interviews (qualitative) (Creswell 2009).

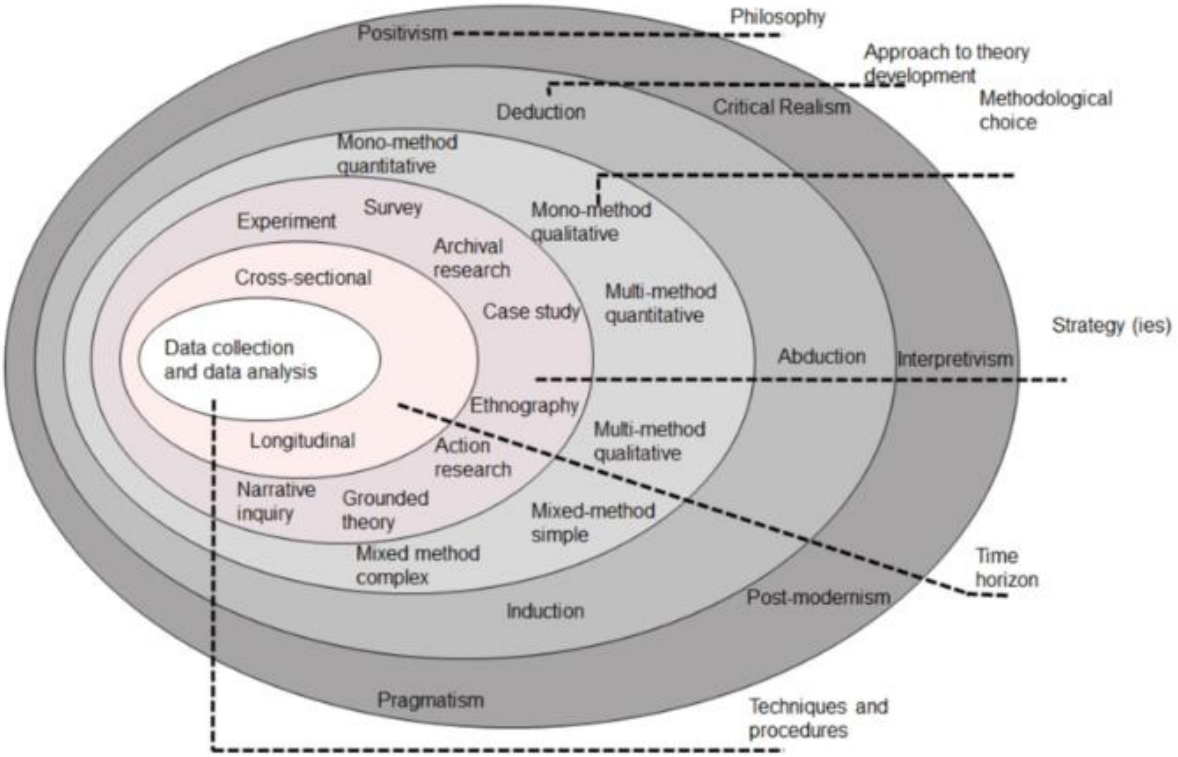



***Figure 2.1: The Research Onion****

***Abstracted from Research Methods for Business Students, Chapter 4: Understanding research philosophy and approaches to theory development (Saunders et al. 2019)***

Whilst the research could have employed quantitative data collection and analysis alone it was felt that the complementary addition of qualitative analysis through interviews would help to provide additional insight into the reasons behind why only 53% of PIPs working in General Practice are using their Independent Prescribing (IP) qualification in practice and possibly offer some suggestions towards requirements for changes in environmental context and resources to help implement changes in practice. The qualitative component of the data

analysis is achieved by adding interviews (single person, dyadic, triadic or focus groups) between 3-5 months post SBE course. Many studies looking at research into the benefits of pharmacy education have demonstrated focus groups can be an effective method of obtaining feedback on the educational content and delivery (Seston et al. 2022), (Bhavsar et al. 2007). One recent study by Fisher et al in 2018 recognised that only around 50% of hospital PIPs in Scotland actively prescribe (Fisher et al. 2018). This research utilised interviews and questionnaires to delve deeper into the possible reasons behind this (Fisher et al. 2018).

Research into pharmacy practice commonly focusses on service and intervention design, implementation, and evaluation, Interestingly, however, while intervention research uses behavioural theories, models and frameworks to understand how interventions make a difference to outcomes and sustained interventions the pharmacy profession has not well described the rational for the chosen behavioural theories, models and frameworks used in the research (Nazar et al. 2024).

This research chose to adopt The Kirkpatrick Model (Kirkpatrick and Kirkpatrick, 2016) to evaluate the overall outcomes for participants following SBE training delivery and the Theoretical Domains Framework to analyse the qualitative element of the research (Cane et al. 2012) with the rational for selection provided in 2.2.2 and 2.2.3 respectively. Other frameworks were however considered but not adopted.  One option considered to evaluate the overall impact of SBE was the Biggs 3P model of teaching and learning (Biggs 1999). This model of evaluation considers the interactions of Presage (prior knowledge of students and the teaching context), Process (learning focussed activities) and Product (qualitative, quantitative, and affective learning outcomes). It was felt that this model did not quite fit the research project as the research did not go into significant depth around prior knowledge of the participants and the fact that SBE is not taught but more a learning event that focusses more on de-brief, self and peer evaluation and self-reflection post course. The Biggs model is more suited for analysis of curricula and not the impact of an educational intervention on the participant. Another model more specifically related to evaluating the quality of care, the Donabedian three component approach (Donabedian 2005) was also considered. Donabedian looks at structure measures, process measures and outcome measures with the belief these have an effect on each other in the listed order. This model however does not specifically focus on educational intervention to support greater outcomes for the healthcare professional and ultimately the patient so was not selected.

The Consolidated Framework for Implementation Research (CIFR) (Damschroder et al. 2022) was considered but not chosen over the TDF. CIFR was developed, with the knowledge that many efforts to implement innovative, evidence-based strategies fail, and aims to predicts or explain the barriers and facilitators to implementation effectiveness but, unlike the TDF, does not focus on the individual participants and the behavioural determinants that influence what people do.

The behavioural change wheel with the COM-B model (Michie et al., 2011) which looks at capability, opportunity and motivation as the necessary components of behavioural change was reviewed as an option to qualitatively analyse the behavioural changes of the participants. COM-B is often used in the public health setting and helps stakeholders designing / delivering the intervention confirm its longevity and sustainability as an intervention. COM-B is relatively non-specific and was felt to be too broad a framework to use for this research.

### 2.2.2 The Kirkpatrick Model

The Kirkpatrick Model is a training evaluation model which was developed initially in 1959 with further updates coming in 1975 and 1993 by Donald Kirkpatrick who had a specific interest in evaluation of training programs. Again in 2016 the model was further developed by Donald's son and daughter in law and is also known as the 'Kirkpatrick's four levels of Training Evaluation' (Kirkpatrick and Kirkpatrick, 2016). This training evaluation model was selected for use in this project based on its frequent use in the evaluation in many strands of medical education (MacGaghie et al. 2016), (MacGaghie et al. 2009), (Graham and McAleer 2018), (Bewley and O'Neil 2013) and more specifically healthcare clinician related SBE training (Johnston et al. 2018). It was felt that this model fitted with the aims and objectives of this research creating an actionable and measurable plan to clearly define goals, measure results and identify areas of notable impact. Whilst the quantitative aspect of the research will only be able to provide data aligning with Objectives 1 (reaction), 2 (learning) and 3 (behaviour), individually it will be interesting to see if the qualitative aspect of interviews will provide thematic / textual data for all three objectives 1, 2 and 3 and possibly some insight into level 4 (results) of The Kirkpatrick Model (Kirkpatrick and Kirkpatrick 2016). Limitations of using The Kirkpatrick model are that it didn't originate in health practitioner science and whilst it is outcomes focussed it fails to consider factors that can impact on outcomes.

### 2.2.3 Theoretical Domains Framework (TDF)

When a novel educational tool is implemented for healthcare professionals it is important to understand the behavioural determinants that can influence the actual behaviour. These determinants can then be used to identify behaviour change techniques that can be used to facilitate the design of education and training initiatives. This in turn helps provide reassurance that the training is supported by sound theoretical underpinnings and takes an evidence-based approach that is likely to be useful in the wider contexts beyond the pilot / test phase.

As said above, interviews in the form of focus groups are one of the most widely utilised qualitative techniques in research. Interviews generally require a thematic framework to support the development of the interview schedule, questions asked, and prompts used by the researcher to the participants during the interview. This framework is then subsequently used to analyse the participants comments, allowing for development of themes to report on. For this research the Theoretical Domains Framework (TDF) was used to identify determinants of behaviour (Cane et al. 2012).

The TDF is an integrative theoretical framework and has been refined to comprise of 14 theoretical construct domains: *'Knowledge', 'Skills', 'Social/Professional Role and Identity', 'Beliefs about Capabilities', 'Optimism', 'Beliefs about Consequences', 'Reinforcement', 'Intentions', 'Goals', 'Memory, Attention and Decision Processes', 'Environmental Context and Resources', 'Social Influences', 'Emotions', and 'Behavioural Regulation'* (Cane et al. 2012). Atkins et al., suggest that uses for "*the TDF include the provision of a theoretical basis for implementation studies, good coverage of potential reasons for slow diffusion of evidence into practice and a method for progressing from theory-based investigation to intervention"* (Atkins et al. 2017).

Translating this into the relevance to this research by analysing each domain of the TDF and generation of specific themes from this it should help provide insight into aspects of SBE course development. Although not specifically used in previous SBE research, the TDF has been used in the thematic analysis of qualitative interviews in other post course analysis within the pharmacy research setting. A relevant example of utilisation of the TDF was in a recent study by Rushworth and colleagues to explore the implementation of the skills learnt on the Advanced Clinical Examinations (ACE course) for GPCPs. (Rushworth et al. 2022).

### 2.2.4 Adaptation of the Tolerance of Ambiguity for Medical Students and Doctors (TAMSAD) tool for this research

As previously described in the introduction, Hancock et al. realised that the many tools that existed to measure this 'tolerance of ambiguity' were not of sufficient quality to fully obtain answers required to improve outcomes (Hancock et al. 2014). With this, Hancock et al. produced the TAMSAD tool as a validated tool containing 29 statements requiring answers on a Likert scale from strongly agree to strongly disagree (Hancock et al. 2014). Although only developed and validated for use in Medical Students and Doctors, the TAMSAD tool has been used across healthcare professions from nursing to medicine and pharmacy to veterinary professionals to draw comparisons between healthcare professions (Hancock et al. 2017) and analyse changes in tolerance of ambiguity post interventions such as SBE (Tallentire et al. 2022).

To evaluate the impact the SBE has on the learning for the participant, as it was recognised that the TAMSAD was specifically developed for medical students and doctors, an adapted version (Appendix 2) of the TAMSAD, a validated tool in the medical field, was used (Hancock et al. 2014). This adaptation maintains the theme of each statement however changes the statement wording from being specific to medical students and doctors working in the medical field and widens the scope to clinicians working in the field of clinical practice.

The adapted version made minor changes to the following wording:

- 'medical' changing to 'clinical'
- 'medicine' to 'clinical practice'
- 'doctor' to 'clinician'

These adaptations were checked and approved for face and content validity by an experienced selection of 7 senior medics, nurses and pharmacists in research, education, and clinical practice fields who were approved by the supervisory team. These 7 experts provided comments on each statement and the proposed amendments accordingly. Whilst not all suggested changes were accepted by the research team, they were all considered and changes were made, where appropriate. Full details of the expert feedback can be seen in Appendix 3.

## 2.3 SBE Course detail and setting

Course details were provided to all NHS Scotland Health Boards, NHS Scotland employed GPCPs, and Faculty. Courses for GPCP SBE were advertised on the NES TURAS training platform for Pharmacists. Course details were developed by the researcher in conjunction with NES and HIPER Simulation Faculty, provided through NES TURAS Portal (Appendix 4). The course was open to GPCP Pharmacists employed by NHS Scotland in an NHS Scotland Health Board. GPCPs applying for the course needed to be working as Pharmacist Independent Prescribers in a patient-facing role in General Practice. They also were required to have completed NES Core Clinical Assessment Skills Course including being comfortable to use these skills in practice, have completed NES Consultation Skills Course and were required to be undertaking patient facing-consultations in practice. GPCPs who met the pre-requisites criteria and had agreement to participate in the course from their Line Manager were able to sign up for the SBE course of their choice, based on availability.

Eight, half day SBE courses were run across 4 geographical locations in Scotland. These locations were: University Hospital Crosshouse, Ayrshire and Arran for the West; Western General Hospital, Edinburgh for the East; Raigmore Hospital, Inverness for the North; and The Balfour, Orkney for the Highlands and Islands.

The stated learning aims for the SBE course were to provide the GPCPs with opportunity to develop their clinician assessment, management, prescribing and consultation skills through observed interactions with simulated patients over a range of common clinical encounters within General Practice. The learning outcomes of the SBE course were to develop confidence and demonstrate competence in clinical assessment, management, prescribing and consultation skills over a range of common clinical encounters within General Practice: including acute and long-term conditions, polypharmacy and multimorbidity, interpreting clinical findings and investigation of results.

Each course had four participants (current GPCPs) per half day session with four clinically relevant simulation scenarios per session which were developed in line with the SBE course core values by the Pharmacy Simulation Faculty members of HIPER. (Appendix 4). Each participant completed one simulation scenario, which were selected at random and in no particular order and observed three simulation scenarios. For each scenario, course facilitators, all trained in SBE following attendance at the two days, ‘Introduction to SIM: Making it work’ course run by SCSCHF, delivered pre-briefs, observed the scenario by video link and facilitated de-briefs.

Simulation scenario patients were played by NHS clinicians with current experience of working in General Practice / pharmacy education. Simulation scenario 'patients' received information on the scenario and their role as a patient one week prior to attendance at the SBE course and were allowed to ask questions / confirm elements of the case with the faculty prior to the simulation (Appendix 4). Participants and simulation scenario 'patients' were asked not to share on any detail of the cases used within the SBE course to ensure other participants gained the most benefit possible from their participation, at a later date.

## 2.4 Recruitment to research study

General course details were advertised on the NES TURAS training platform where it was stated that as the SBE course was a novel approach to training within the GPCP national training pathway and that all GPCPs attending would be invited to participate in the research element of this SBE course at point of registration on the course. It was also detailed that participation in the research element would be voluntary and therefore participants were able to withdraw from the research at any point without prejudice. With four GPCP participants enrolled on each SBE course there were 31 possible participants included in this study.

Following enrolment on the SBE course, an email was sent to each participant from the researcher requesting their participation in the research. Participants were provided with a minimum of 4 weeks to respond to this email. One reminder email was sent to each participant who failed to respond. Participants were required to give their consent to participate in this research by reading the Research Participant Information Sheet (Appendix 5) and emailing the researcher, by return email, a completed copy of the Participant Consent Form (Appendix 6).

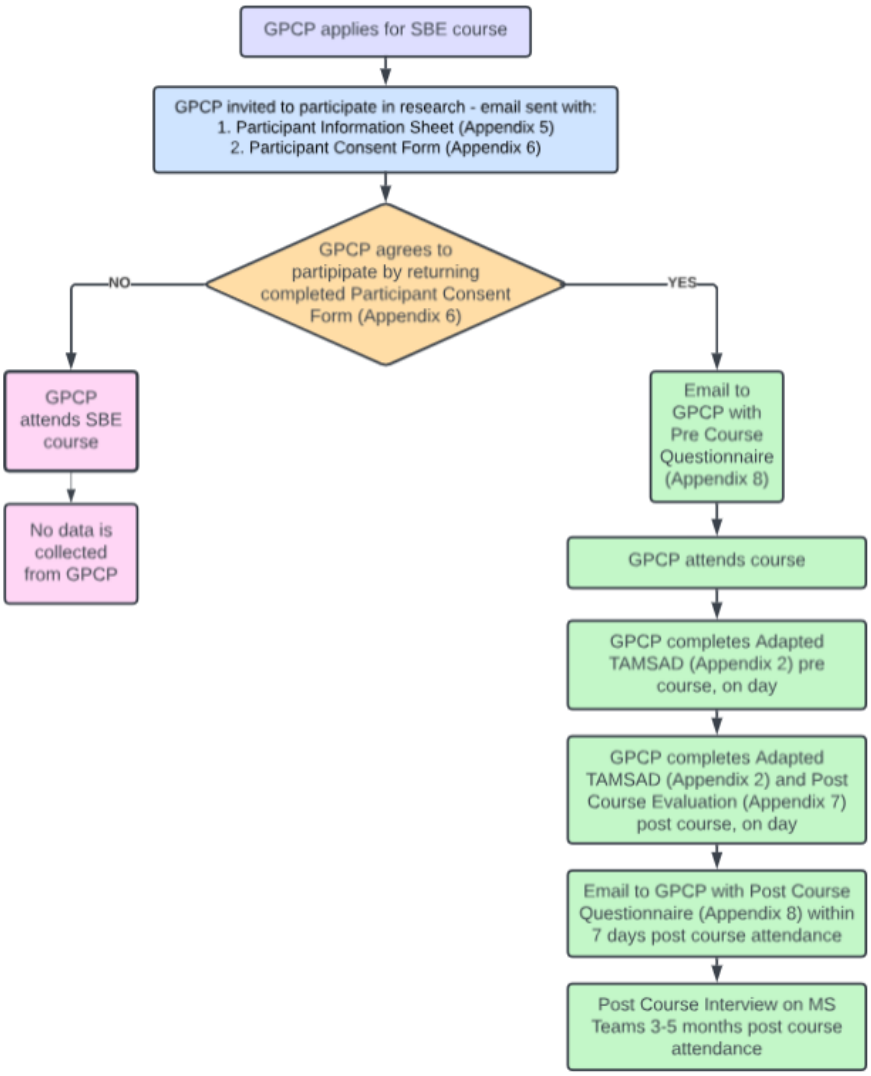



*Figure 2.2 Flowchart of GPCP participant recruitment to and subsequent flow of study data collection.*

*NB: Data Collection Methods of Post Course Evaluation, Pre and post Course Questionnaires as well as Post Course Interviews will be explained in more detail in Methods of Data Collection.*

## 2.5 Methods of Data Collection

Having provided detail around the mixed method approach to this study, this section will describe in more detail how each element of the study was designed to align with and achieve the objectives set.

## 2.5.1 Methods for each of the Research study objectives

### *2.5.1.1 Methods for Objective 1: Views of GPCPs on how engaging, favourable, and relevant the SBE course was (Reaction)*

**Objective 1:** Reaction (Kirkpatrick Level 1). To evaluate the views of GPCPs on how engaging, favourable, and relevant the SBE course was.

This was assessed by using a post course evaluation questionnaire completed by participants (Appendix 7).

#### 2.5.1.1.1 Setting, Sampling and Data Collection Methods

A post course evaluation form was designed to include the following constructs:

- Course Venue, Location and Facilities:
    - general feedback
- Simulation physical environment:
    - feedback on suitability of the simulation room,
    - Feedback on suitability of de-brief room
    - Feedback on sound and visual quality
- Learning Objectives:
    - Clarity of LO's
    - Pitching of case complexity
- Simulation-based Education Course:
    - Rating of facilitators
    - General rating of the SBE course
- Free text options to answer the following questions:
    - Please add any other comments you would like to make on the quality of the training session.

- Thinking about the SBE course you have attended today, is there anything you would suggest we change when delivering to the next group?
- Do you have any other comments or suggestions about the SBE course?

Questions were a mixture of Likert scale responses including; 5-point scale: Strongly Agree to Strongly Disagree, 4-point scale: Excellent to Poor, 3-point scale: fully met to not met. In addition to some free text options to allow respondents to provide detailed comments and suggestions, (Appendix 7).

This post course evaluation form was given to each of the research participants (N=30) on the day of the SBE course following completion of the session. The recipients were asked to fill out the form as honestly as possible. Evaluation forms were anonymised to encourage honest and constructive feedback without any fear of judgement or comeback. The development of the post course evaluation form was based on the standard NES course feedback forms and was developed specifically for the simulation course to capture feedback on all aspects of the course such as venue, course content and course facilitation. The post course evaluation was developed by the researcher with input from research supervisors. Prior to deployment, the post course evaluation form was piloted by research collaborators and course facilitators to check for relevance, accessibility, and clarity.

#### 2.5.1.1.2 Analysis

Descriptive analysis was done for the responses on each of the various scales relating to the constructs outlined above to allow for insight into the reaction of the participants of the general SBE course to allow for review and improvement moving forward for future courses.

### *2.5.1.2 Methods for Objective 2: the effect of the SBE course on the participants perceived changes in knowledge, confidence, experience, and skills (Learning)*

**Objective 2:** Learning (Kirkpatrick Level 2). To evaluate the effect of the SBE course on the participants perceived changes in knowledge, confidence, experience, and skills.

This was assessed by the participants completing identical pre and post course questionnaires immediately before and after the course, (Appendix 8).

#### 2.5.1.2.1 Setting, Sampling and Data Collection Methods

It is important to profile the participants attending the SBE course. For this participant profiling, pre and post SBE course online questionnaires were developed (Appendix 8) to gain specific baseline characteristics of the course participants:

- Employer health board
- Current participation in GPCP framework
- Length of time participating in the GPCP framework, if applicable
- Experience working in each pharmacy sector (Primary Care, Secondary Care, Community)
- PIP Qualification
- Time qualified as a PIP, where applicable
- Prescribing activity status
- Additional training completed (e.g., postgraduate training)

The same pre- and post-course questionnaires also collected participant self-assessment of their clinical practice in relation to the constructs of knowledge, confidence, and experience.

Scoring was based on a Likert scale of strongly agree to strongly disagree. These questionnaires were based on a similar format to the pilot study conducted by NES in 2020 (Rushworth et al. 2021).

Research participants (N=30) were emailed the pre-course questionnaire following registration on to the SBE Course and return of completed research participation paperwork (Appendix 6) which was at least 4 weeks prior to course attendance to allow the participants an appropriate timeframe to complete, given their busy work schedules, allowing for any periods of annual leave, which in the do not often extend beyond 2 weeks. Participants were also given the opportunity to complete the pre-course questionnaire on arrival to the course venue, if they had not had the opportunity to do in the lead up to attendance. Post-course questionnaires were sent out by email to each research participant immediately following completion of the course. Participants were given 4 weeks to complete this post-course questionnaire with one reminder email being sent within this time period if not yet completed. Again 4 weeks was selected as a timeframe to allow the participants to complete the questionnaire in their busy work schedules and allowing for any periods of annual leave, which in the do not often extend beyond 2 weeks. The questionnaires were completed by Microsoft Forms® online by participants.

#### 2.5.1.2.2 Analysis

Analysis of the participants self-reported changes to their practice based on their learning at the SBE course by means of answering the same questionnaires pre and post SBE course.

A 33-item tool developed by the researcher was used to determine impact on clinical practice in relation to the constructs of knowledge (8 items), confidence (18 items) and experience (7 items) pre and post the delivery of the course.

Construct scale scores before and after GPCP SBE course were used to test the hypothesis that the course increased participant scores on the constructs of knowledge, confidence, and experience.

Item responses were on a 5-point Likert Scale (Strongly Agree to Strongly Disagree). Pre/post construct scale scores were transformed to a 0–100 scale using new score = 25(old score -1). The purpose of transforming the construct scores to a 0-100 scale which converts scores as part of the process of scaling and norming based on psychometric scaling allows for the comparison of individual scores to a referenced population i.e. the GPCP workforce.

Differences were analysed using the Wilcoxon Signed Ranks Test which is a non-parametric statistical test used to determine wither there is a significant difference between two paired conditions, i.e. the pre course and post course analysis. Cronbach's alpha was used to test scale item reliability with the results indicating how well the measured the same underlying constructs (Boateng, G. O., et al 2018). A statistician was consulted to confirm the appropriateness of statistical tests and analysis used for Objective 2.

### *2.5.1.3 Methods for Objective 3: how SBE affects behaviours of the participants in relation to the tolerance of ambiguity*

**Objective 3:** Behaviours (Kirkpatrick Level 3). To evaluate how SBE affects behaviours of the participants in relation to the tolerance of ambiguity.

This was evaluated using pre and post course adapted TAMSAD. (Appendix 2).

#### 2.5.1.3.1 Setting, Sampling and Data Collection Methods

Immediately prior to the pre-brief for the first simulation scenario, a copy of the adapted TAMSAD was provided to each research participant to complete (N=30). Following final de-brief session, a second copy of the adapted TAMSAD was provided to each research participant to complete (N=30). The adapted TAMSAD tool (Appendix 2) was used for more data collection on the day of the SBE Course both pre and post course delivery.

#### 2.5.1.3.2 Analysis

Completed pre and post adapted TAMSAD forms were collated by the researcher to allow for analysis; to compare the changes of each individual's tolerance of ambiguity following their attendance and participation in a SBE course. Aligned with the analysis carried out by Hancock et al. the adapted TAMSAD scoring system including reverse scoring of some items was employed (Hancock et al., 2014). Differences were analysed using the Wilcoxon Signed Ranks Test chosen as it is a non-parametric statistical test used when analysing paired data. It is a good tool to use when sample sizes are small as it does not rely on the normality assumption.

### *2.5.1.4 Methods for Objective 4: exploration of Kirkpatrick levels 1 to 3*

Objective 4: Overall qualitative review of Interviews (Kirkpatrick Levels 1-3). To evaluate the reactions of the participants following attendance the SBE course aligning with Level 1 of the Kirkpatrick Model of research (Kirkpatrick and Kirkpatrick 2016) whilst also reviewing the overall effect the SBE course had on the participants in levels 2 and 3 of the Kirkpatrick Model (Kirkpatrick and Kirkpatrick 2016), their learning and behavioural changes.

#### 2.5.1.4.1 Setting, Sampling and Data Collection Methods

Due to availability of participants working in an exceptionally busy clinical, often patient facing environment, it was not possible to conduct all the interviews in the format of focus groups, therefore, a combination of semi-structured single person interviews, dyadic interviews and focus group interviews were undertaken three to five months post SBE course. The interview schedule was mapped to the TDF and was reviewed for face and content validity by the research supervisors and one of the research collaborators and was

piloted in a ‘simulated environment’ with the help of another research student playing the part of the participant and feeding back with comments after the interview test was complete. The focus group topic guide can be found in more detail in Appendix 9.

It is important to note that Level 4 of the Kirkpatrick Model of Research looks at higher level organisational outcomes (Kirkpatrick and Kirkpatrick 2016) and whilst the researcher will report on participants perception of how the SBE course attendance influenced their practice and perhaps improved patient care this was not measured quantitatively or qualitatively per say.

#### 2.5.1.4.2 Analysis

All quotes were organised by coding in NVivo® and then were split into themes and sub-themes using the TDF (Cane et al. 2012). Each theme and sub-theme identified was aligned with the most appropriate level of the Kirkpatrick evaluation model and described in more detail with quotes provided within each theme. Coding of all interview transcripts was cross checked by an experienced qualitative researcher and confirmed for accuracy.

## 2.6 Ethics

Formal ethics approval was obtained (Appendices 11 and 12) by completion of the RGU Research Ethics: Research Student and Supervisor Assessment (RESSA) form (Appendix 10) and Social and Ethical Responsibilities of Computing (SERC) Proposal Human Data Form.

The research has adhered to all relevant Robert Gordon University policies (RGU 2016 a) (RGU 2016 b) (RGU 2021).

All data has been stored and processed in accordance with the Data Protection Act 1998 (UK Government 1998). All data will be stored for five years after publication and in line with RGU Research Data Management Policy 2021 (RGU 2021).

### 2.6.1 GPCP Research Participation Process

Figure 2.2 Flowchart of GPCP participant recruitment to and subsequent flow of study data collection provides the detail described below pictorially.

#### *2.6.1.1 Participant consent form*

All participants were be asked to read the participant information sheet (Appendix 5) and if willing to take part in the research were asked to complete the participant consent form (Appendix 6).

#### *2.6.1.2 Participant questionnaires and course evaluation*

Pre and post course questionnaires were be collected using Microsoft Forms® through the individual researchers Microsoft® 'One Drive' with results collated and saved in this environment. Adapted TAMSAD questionnaires (Appendix 2) and post course evaluation forms (Appendix 7) were collected in paper form and scanned into the Principal Investigator's (PI) (also referred to as the researcher) Microsoft Office 365® (O365) 'One drive' for safe and secure storage.

#### *2.6.1.3 Post course Interviews*

The online Microsoft Teams® video recordings, audio recordings and transcriptions were downloaded as soon as each interview finished and were stored on the O365® 'One Drive' in the private files of the Principal Investigator (PI) using the Focus Group Identification Number (FGIN).

Identifiable information was removed, and files were password protected. The PI populated the transcript with a Participant Identification Number (PIN) and read the transcripts for any sensitive or identifiable information.

Printed versions of any transcriptions were to be stored in a locked cupboard and destroyed five years after publication according to ethics application however no files were printed so

this was not relevant. All computer files were password protected. Names were not recorded as part of the interviews – each participant will be allocated a code and described by that code throughout. Participants were also able to ask that the recorder be switched off at any time and were also advised that they can also withdraw from the study at any time, without giving any reason.

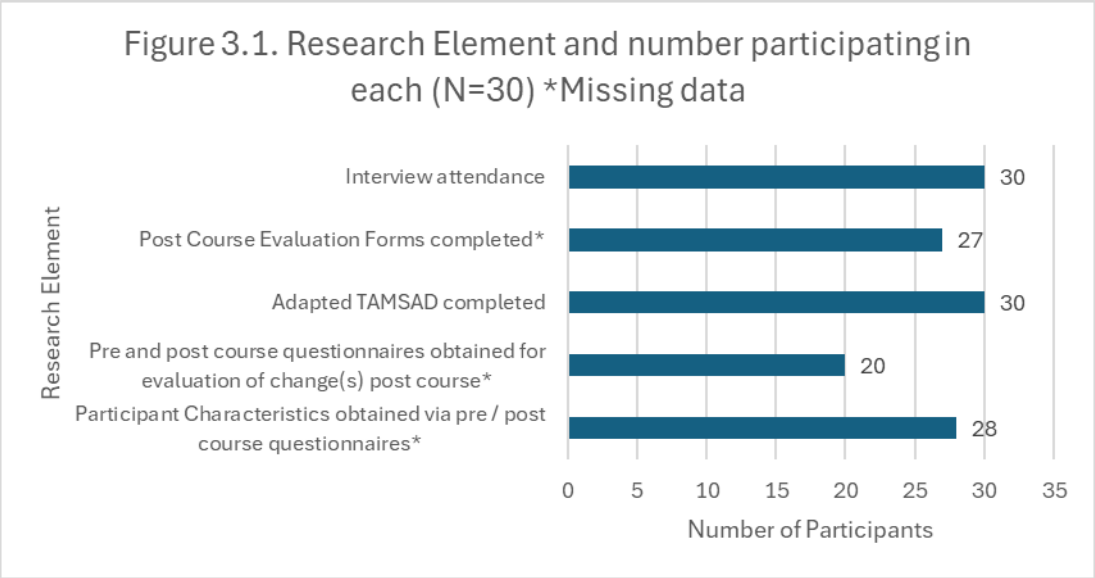
### 2.6.2 Data Management

Data obtained per Objectives 1-4 were analysed, and a report will be provided to NES to consider improvements for the future delivery of this training intervention following finalisation of the research. It is also hoped that the data will provide a report of publishable interest, in a relevant education journal. Once data has been analysed and the report finalised, participants can email the project team to request a copy of the report. The whole dataset will be seen only by the research team and no identifiable data will be shared with others. In any publication, the data will be presented in a way that means no-one will be able to link the data provided to the participants identity and name. This was done by removing the participants name from the data during entry (questionnaires – objectives 1-3) or transcription (interviews – objective 4) and using a neutral identification number. The personal data collected will only be used to support legitimate research activities that are in the public interest.

# Chapter 3: Results

## 3.1 Course attendance and data collection overview

Thirty course attendees agreed to participate in the research by completing the required participant consent form. The information provided below in Figure 3.1 provides more detail around participant numbers for each element of the data collection stage. Missing data is highlighted, and this was down to non-response from participants at different stages of the data collection.

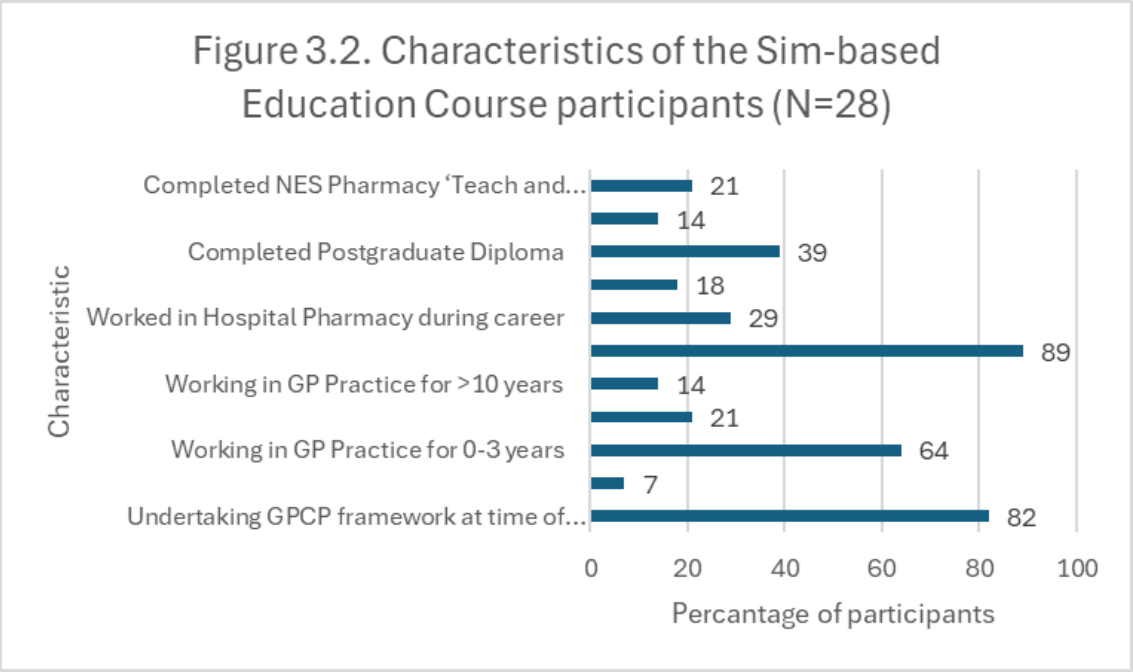



### 3.1.2 Participant Characteristics

Participants practiced in 8 of the 14 regional health boards in NHS Scotland including: Ayrshire & Arran (n=2), Fife (n=1), Greater Glasgow & Clyde (n=6), Highland (n=11), Lanarkshire (n=2), Lothian (n=2), Orkney (n=4) and Shetland (n=2).

All 30 research participants (N=30) were qualified Pharmacist Independent Prescribers (PIPs) as this was a course registration pre-requisite.

Twenty-eight participants responded to the questionnaires which allowed for the following information to be collated into Figure 3.2 below.




## 3.2 Objective 1: Views of GPCPs on how engaging, favourable, and relevant the SBE course was (Reaction)

Reaction (Kirkpatrick Level 1). To evaluate the views of GPCPs on how engaging, favourable, and relevant the SBE course was through research participants completion of a post course evaluation (Appendix 7). Of the 30 participants who agreed to be part of the research study, 27 participants completed a post course evaluation questionnaire to establish their overall reactions to the course. This post course evaluation was completed anonymously.

### 3.2.1 Part 1: General Feedback on Course Venue, Location and Facilities

Public transport was considered as excellent or good by all attendees who required to use this method of transport. For those participants who drove, parking facilities were considered as excellent or good by all. With regards to the location of the training 52% of respondents (n= 14) thought the location was excellent, 37% (n = 10) thought it was good and 11% (n = 3) thought it was average. Not all respondents were happy with the refreshments provided with 22% (n = 6) saying they were average and 11% (n = 3) stating they were poor.

**Table 3.1:** Feedback on Venue – location, travel, and parking – this table relates to 27 SBE course participants (N=27)

| | **Excellent % (n)** | **Good % (n)** | **Average % (n)** | **Poor % (n)** | **N/A % (n)** |
|---|---|---|---|---|---|
| Public Transport Links | 15 (4) | 18 (5) | 0 (0) | 0 (0) | 67 (18) |
| Parking Availability | 52 (14) | 41 (11) | 0 (0) | 0 (0) | 7 (2) |
| Location of Training Venue | 52 (14) | 37 (10) | 11 (3) | 0 (0) | 0 (0) |
| Refreshments Provided | 52 (14) | 15 (4) | 22 (6) | 11 (3) | 0 (0) |

### 3.2.2 Part 2: Simulation physical environment

Feedback on the environment in which the SBE was delivered was very positive. The simulation room, de-brief rooms as well as the sound and visual quality were considered excellent or good by 100% of respondents.

**Table 3.2:** Feedback on Venue – physical environment of SBE delivery – this table relates to 27 SBE course participants (N=27)

| | **Excellent % (n)** | **Good % (n)** | **Average % (n)** | **Poor % (n)** | **N/A % (n)** |
|---|---|---|---|---|---|
| SIM Room | 63 (17) | 37 (10) | 0 (0) | 0 (0) | 0 (0) |
| De-brief Room | 63 (17) | 37 (10) | 0 (0) | 0 (0) | 0 (0) |
| Sound and Visual Quality | 59 (16) | 41 (11) | 0 (0) | 0 (0) | 0 (0) |

### 3.2.3 Part 3: Learning Objectives

Learning objectives for the SBE course were considered as ‘clearly stated’ by 78% (n = 21) of respondents with no respondents disagreeing / strongly disagreeing with this.

**Table 3.3:** Feedback on clarity of SBE Course Learning Objectives – this table relates to 27 SBE course participants (N=27)

| | **Strongly Agree % (n)** | **Agree % (n)** | **Neutral % (n)** | **Disagree % (n)** | **Strongly Disagree % (n)** |
|---|---|---|---|---|---|
| Learning Objectives were clearly stated | 78 (21) | 4 (1) | 18 (5) | 0 (0) | 0 (0) |

By the end of the SBE course the pre-defined learning outcome which was, *'develop confidence and demonstrate competence in clinical assessment skills over a range of common clinical encounters within general practice; including acute and long-term conditions, polypharmacy and multimorbidity, interpreting clinical findings and investigation results'* was fully met for 70% (n = 19) of respondents and partially met for 30% (n = 8).

**Table 3.4:** Feedback on the extent to which the SBE Course Learning Objectives were met – this table relates to 27 SBE course participants (N=27)

| | **Fully Met % (n)** | **Partially Met % (n)** | **Not met % (n)** | **Unable to comment % (n)** |
|---|---|---|---|---|
| Learning Objectives | 70 (19) | 30 (8) | 0 (0) | 0 (0) |

Twenty-six (96%) respondents thought that the simulation cases were pitched at the right level to meet the learning objectives with only one responder staying neutral on their response to this question.

**Table 3.5:** Feedback on the case scenarios delivered at the SBE Course in relation to them meeting the Learning Objectives – this table relates to 27 SBE course participants (N=27)

| | **Strongly Agree % (n)** | **Agree % (n)** | **Neutral % (n)** | **Disagree % (n)** | **Strongly Disagree % (n)** |
|---|---|---|---|---|---|
| Cases were pitched at the right level | 96 (26) | 0 (0) | 4 (1) | 0 (0) | 0 (0) |

### 3.2.4 Part 4: Pre-course information provision

When it came to pre-information sent to participants the survey responses showed that most felt the information received prior to the course about the format of the session provided them with just the right amount of detail with only 6 (22%) respondents stating they were not provided with enough detail.

**Table 3.6:** Feedback on the provision of pre-course information – this table relates to 27 SBE course participants (N=27)

| | **Too much detail % (n)** | **Just the right amount of detail % (n)** | **Not enough detail % (n)** |
|---|---|---|---|
| Pre-course information provided | 0 (0) | 78 (21) | 22 (6) |

### 3.2.5 Part 5: Simulation-based Education Course

A very positive response was received regarding the course facilitators with 96% of participants (N=26) completing the evaluation strongly agreeing that the facilitators present at the course added benefit to their experience and learning.

Overall, respondents rated the Simulation-based Education course highly with 78% (n=21) stating it was very good and 22% (n=6) stating it was good.

### 3.2.6 Part 6: Free text comments from respondents

Respondents were offered the opportunity to provide free text comments to the following three questions:

1. Please add any other comments you would like to make on the quality of the training session.
2. Thinking about the SBE course you have attended today, is there anything you would suggest we change when delivering to the next group?
3. Do you have any other comments or suggestions about the SBE course?

Full details of these free text comments can be found in Appendix 11; however a selection of quotes is detailed below to provide detail of the general theme of responses.

**Quality of the training session:**

Overall comments around the quality of the training session were very positive with anonymous comments like:

> *"The training session was high quality and well thought out factoring in the difficulties of a simulation."*

> *"I felt the session was brilliant. At times I forgot it was a simulation! The feedback and discussion with everyone was constructive."*

**Suggestions for change:**

There were very few suggestions for change made by participants however comments that were given provided good insight into small changes which could be made to improve the participants experience and learning such as more pre-course detail provision either with regards to the therapeutic areas or the format of the session:

> *"… it may be an idea to let the GPCPs know the general clinical areas of the scenarios at the beginning of the session and allowing them as a group to allocate the scenarios amongst themselves to areas where they feel familiar with. I think this would then help people relax as it would feel less like a test as you know what you're expecting, the focus is on the consultation and not knowledge and it would be closer to replicating real life as I don't think many pharmacists in a similar stage in their development as I would go into a consultation completely unprepared."*

> *"I think it would be useful to have more information about the format of the day beforehand, not necessarily what the cases would be but how the day would work. I felt quite apprehensive about the day, but I think more detail about the format would have helped."*

**Any other thoughts on the SBE course:**

Participants were offered a final free text comment box to add any other suggestions or comments they wished to make regarding the SBE course they had attended. Comments were positive and again demonstrated the benefits the participants noted from the SBE

course. Additionally, it was noted that SBE should be available on a regular basis for pharmacists to improve confidence around clinical decision making.

> *"I think that this is something that we should be doing on a regular basis in order to have the feedback we need to improve our clinical decision making, in my view a lot of the autonomous decision-making process relates to having the confidence in one's own ability, this is something that takes time to develop and nurture."*

> *"It was excellent, and all the facilitators were really encouraging and supportive, particularly given how nervous I was to start with. It would be good to be able to have more sessions like this as they are really helpful."*

## 3.3 Objective 2: the effect of the SBE course on the participants perceived changes in knowledge, confidence, experience, and skills (Learning)

**Objective 2:** Learning (Kirkpatrick Level 2). To evaluate the effect of the SBE course on the participants perceived changes in knowledge, confidence, experience, and skills.

Kirkpatrick Level 2 relates to course participant learning with the objective of evaluating the effect of the SBE course on the participants perceived changes in their knowledge, confidence, experience, and skills. This data was captured through the quantitative research method of analysing results from pre and post questionnaires. These questionnaires, as seen in Appendix 8 were identical, asking the same questions to the participant before and after the SBE.

As shown in Figure 3.1, although 28 participants completed one of the pre / post course questionnaires, only 20 participants (71%) completed both questionnaires. This meant analysis on changes in the constructs of knowledge, confidence and experience was only able to be conducted on this cohort of 20 participants.

From the analysis detailed below it was demonstrated that 100% (N=20) of the participants who completed both pre and post course questionnaires showed positive changes in all three constructs of knowledge, confidence, and experience indicating that the SBE course improved these constructs for these participants.

From statistical analysis: the median (Interquartile Range) construct scores were pre/post: knowledge 70.3 (63.3-77.3) / 79.7(72.6-86.7), confidence 60.4 (54.5-71.9) / 69.4 (60.8-82.6) and experience 64.2 (50.9-75) / 78.6 (75-91.1). Cronbach's alpha for each construct was 0.7 or greater which proves reliability of the scale used. There was a statistically significant difference between pre and post values for each construct; knowledge $z=-3.564$, $p<0.001$, confidence, $z=-3.730$, $p<0.001$, experience, $z=-3.335$, $p<0.001$.

## 3.4 Objective 3: how SBE affects behaviours of the participants in relation to the tolerance of ambiguity (behaviour)

**Objective 3:** Behaviours (Kirkpatrick Level 3). To evaluate how SBE affects behaviours of the participants in relation to the tolerance of ambiguity, 30 GPCP participated in the research element of the SBE with 100% (N=30) completing pre and post adapted TAMSAD (Appendix 2). The participants selected their answer for each of the 29 statements in the adapted TAMSAD based on a Likert scale of 'Strongly Disagree' through to 'Strongly Agree'. Scores were added up, including the negative scoring of some items aligned with the scoring methods applied by Hancock et al. in the original TAMSAD scoring tool (Hancock et al. 2014).

Statistical analysis was performed and analysed using the Wilcoxon signed-rank test. The median interquartile range (IQR) scores for pre and post were 57.3 (53.2 to 61.2) and 62.1 (55.2 to 71.8) respectively. Scores of 25 increased, 2 decreased and 3 were unchanged. There was a statistically significant difference, analysed using the Wilcoxon signed-rank test between pre and post values, $Z=-4.233$, $p<0.001$.

These statistical results confirmed that the tolerance of ambiguity of the participants increased following attendance at the SBE course.

## 3.5 Objective 4: exploration of Kirkpatrick levels 1 to 3

**Objective 4:** Overall qualitative review of interviews (Kirkpatrick Levels 1-3). To evaluate the reactions of the participants following attendance the SBE course aligning with Level 1 of the Kirkpatrick Model of research (Kirkpatrick and Kirkpatrick 2016) whilst also reviewing the

overall effect the SBE course had on the participants in levels 2 and 3 of the Kirkpatrick Model (Kirkpatrick and Kirkpatrick 2016), their learning and behavioural changes.

All 30 participants in the research agreed to be interviewed and subsequently attended for interview. The initial plan was for post course focus groups, of 4-5 participants per group, to take place 3-4 months after the course attendance. However, due to all participants working in general practice with busy schedules in time critical clinical roles, this was not possible. Instead, a mixture of interview types were carried out 3-5 months after attendance at the SBE course based on availability of the participants allowing for the difficulties faced for participation at particular times. These interviews consisted of; two focus groups of four participants in each, five triadic group interviews of three participants in each, two dyadic interviews of two participants in each and finally to capture 100% of participants willing to be interviewed there were also three single person interviews conducted. Depending on the interview type the time of the interview ranged from 34 minutes for the single person interview to an average of 58 minutes for focus group interviews.

There are five main themes with a total of nineteen sub themes, detailed below in Table 10, were identified following coding in NVivo® using the Theoretical Domains Framework (Cane et al., 2012). Each theme and sub-theme were aligned with the most appropriate level of the Kirkpatrick Model (Kirkpatrick and Kirkpatrick, 2016) and described in more detail with quotes provided within each theme.

Table 3.7: Themes and sub-themes of Interviews aligned with the Theoretical Domains Framework (Cane et al., 2012)

| **Theme Number** | **Theme** | **Sub Themes** | | **Kirkpatrick Level** |
|---|---|---|---|---|
| Theme 1 | GPCPs knowledge and understanding of simulation-based education before and after attendance at the SBE course. | Awareness of the existence of simulation-based education in healthcare | | Level 1: Reaction |
| | | Authenticity of simulation-based education | | |
| | | Appropriateness of the level at which the simulation-based education course was pitched | | |
| Theme 2 | Emotions, relating to simulation-based education, experienced by the GPCP | Uncertainty prior to attendance at the SBE course | | |
| | | Stepping out of your 'comfort zone' | | |
| | | Safe environment to 'practice' | | |
| Theme 3 | Consequences of attendance at a simulation-based education course for the GPCP | Increased GPCP self-confidence | | Level 2: Learning |
| | | Increased GPCP confidence through shared learning and peer discussion | | |
| | | Improved decision-making skills | | |
| | | Self-reflection | | |
| | | Improved integration within the multi-disciplinary team | | |
| Theme 4 | Social and environmental factors affecting the service delivery and role advancement of the clinical pharmacist working in general practice | Support for attendance | | Level 3: Behaviours |
| | | Application of learning | Support for application of learning | |
| | | | Macro, meso and micro-level socio-institutional influences | |
| | | | Lack of appropriate accommodation to practice as a patient facing GPCP | |
| | | The impact of Covid | | |
| Theme 5 | Optimism for the development of simulation-based education and the ongoing delivery of courses | Optimism for simulation-based education for the GPCP in the future | | Level 4: Results |
| | | Optimism for general pharmacy training in the future | | |
| | | Optimism for multidisciplinary simulation-based education in the future | | |
| | | Suggestions for future simulation-based education courses | | |

### 3.5.1 Theme 1: GPCPs knowledge and understanding of simulation-based education before and after attendance at the SBE course.

The TDF domain of knowledge is the link to all sub-themes presented below.

#### *3.5.1.1 Awareness of the existence of simulation-based education in healthcare*

Participants expressed their knowledge of what SBE was before they attended, and this knowledge varied amongst participants.

> *"It's a tool for learning in in a safe environment with peer support and in terms of feedback on consultation skills, clinical skills, decision making."* **- P14**
>
> *"It's kind of like being in role play situations and being in scenarios that you might have in general practice and learning from them."* **– P22**
>
> *"It's not something I've really thought much about, but for example, the one that we went to, I didn't quite realize that we would all be … videoed and watched and critiqued … it wasn't something that I thought was involved."* **– P22**

Participants also described how, following attendance at the SBE, they felt it needed to be better advertised.

> *"There's got to be like a greater understanding of what SIM is and what it isn't and where it's best suited to at what stage of your development is it applicable as well."* **– P14**
>
> *"I think there needs to be greater publicity and awareness of this type of training."* **– P15**

### *3.5.1.2 Authenticity of simulation-based education*

Participants described their experience of SBE relating to how real to life the scenarios were and how they felt because of this.

> *"… the fact that you forgot that you were actually in a simulation that did feel like it was more real life."* **– P9**

> *"It gives you, like an immersive experience, so you feel like you're actually doing it and it kind of makes you think about your practice as well."* **– P11**

> *"… the closest you can get to actually having a real patient in front of you"* **– P6**

> *"… the scenarios that were there were absolute snapshot, but they were all potentially like real life or variations on what you could come across … Oh my goodness, that person could walk in tomorrow and hit you with something like that."* **– P7**

### *3.5.1.3 Appropriateness of the level at which the simulation-based education course was pitched*

Participants gave their opinions on the scenarios and the level of complexity of these relating this to the GPCPs and their knowledge, experience and time in practice noting the benefit gained from the level the scenarios were pitched at relating to the participants varying levels of confidence and competence.

> *"I think it's really beneficial for everyone and I think no matter what level you were as well, because the group I was in, we had pharmacists that had never had a clinic, had never seen anyone to a couple of us that have multiple clinics a week and we all learned from each other, and all benefited from it. I think it was huge value and I think it's useful to have a mix of skills as well so you can help each other out and learn from each other because just because you've been doing something for a while doesn't necessarily mean you're doing it right either, so I think it's useful."* **– P12**

*"The difference in clinical skills and experience was very wide within the group that was attending this session and I think I think you probably pitched it right, in the sense that you don't want to put people in a position having never done something like this before that come out of it going, that was awful"* - **P18**

### 3.5.2 Theme 2: Emotions, relating to simulation-based education, experienced by the GPCP

This theme strongly relates to the domain of 'Emotion' in the TDF framework, where the participants describe their thoughts and feelings experienced before, during and after attendance at the SBE course.

#### *3.5.2.1 Uncertainty prior to attendance at the SBE course*

The pharmacists describe feelings relating to their worries or fears before attending the course, including:

*"I was hesitant because I hadn't ever done a SIM course before"* **– P16**

*"… it's [SBE] quite nerve wracking for a lot of people"* **– P19**

A participant acknowledged that they may not have attended had they understood what was involved:

*"To be honest, I didn't realise what I was booking. I thought it was something else and was only when they got there was like, what is this and had a complete panic attack. If I'd actually known what it [SBE] was beforehand, I probably wouldn't have booked it to be honest … but I'm glad I did it [SBE]."* **- P3**

A suggestion made to reduce this ‘fear of the unknown’ was:

> *“… have a video recording of a sessions so people can see it's not actually that scary when you go to do it [SBE]”* **– P15**

### *3.5.2.2 Stepping out of your ‘comfort zone’*

Participants described emotions whereby they felt the SBE course made them work out of their comfort zone.

> *“… it [SBE] is a leap out of the comfort zone.”* **– P7**

> *“It [SBE] put me out of my comfort zone because you didn't know what was coming you had no time to prepare for it but in the situation, once you get into the room, it actually felt like real life.”* **– P9**

### *3.5.2.3 Safe environment to ‘practice’*

Participants described SBE to be a course where they felt safe to try things, knowing they could learn without causing any harm:

> *“It was OK to be vulnerable, I suppose, because it [SBE] is still a safe space as a healthcare practitioner so we should all get a bit more comfortable with being vulnerable so that we can develop and so I think even though was scary it [SBE] was also quite rewarding, and I think that was quite key. Feeling safe without vulnerability is knowing that it's not about being turned down but being built up and being encouraged to even be better in our clinical practice.”* **– P8**

Participants felt that the SBE course provided a safe, comfortable learning environment:

> *“It's a different way of learning in that controlled safe environment.”* **– P17**

*"… it was beneficial because it was such a safe environment, and everybody was very much very supportive. It means that I have the confidence to tackle something because I now know that I've got the safety net of that debrief."* **- P24**

Clinical decision making is a complex and dynamic process that plays a crucial role in ensuring the best possible outcomes for patients. As previously mentioned, the key components of clinical decision making include assessment, diagnosis, evidence-based practice, patient-centred care, risk-benefit analysis, ethical considerations, communication, and documentation. Participants noted, positively, the opportunity to practice this clinical decision making within a safe environment during the SBE. Participants highlighted that, earlier in their education and training, they had not had the opportunity develop their skillset in this area of practice, and they felt SBE helped provide this safe space to 'practice' before facing real life scenario's. They said:

*"We're not trained, and we're scared. If you're not getting the training and you're not getting it in a safe environment, you don't want to be faced with a live patient … at a simulation-based training, it is fabulous for that and getting feedback in a safe environment … having those difficult conversations with patients … We don't know how to do that, and I think SIM training would be just amazing to learn those skills."* **– P25**

### 3.5.3 Theme 3: Consequences of attendance at a simulation-based education course for the GPCP

Key sub-themes within theme 3 link to the following TDF domains: skills, social / professional role and identity, beliefs about capability, beliefs about consequences, reinforcement, memory, attention and decision processes and behavioural regulation.

#### *3.5.3.1 Increased GPCP self-confidence*

Following attendance at the SBE course the GPCP describes an increase in their confidence to work as a general practice clinical pharmacist independent prescriber, especially in the patient facing, clinical requirement of their roles:

*"I think that's it [SBE] helped to boost my confidence a bit in my own skills and understanding"* **– P23**

*"… it [SBE] did give me that confidence to deal with more face-to-face consultations"* **– P2**

### *3.5.3.2 Increased GPCP confidence through shared learning and peer discussion*

Participants described how their roles often involved lone working with little interaction with peers and how they felt that the SBE course helped them gain confidence in their own abilities through learning from and with other peers and "*having that reassurance from peers"* – **P23**

*"… it [SBE] gave me more confidence in my practice from the feedback that I got and because I feel like a lot of the time, especially in practice, you're working on your own, so you don't ever get any feedback. So, I think it was nice just to go along and not compare yourself, but just to see what everyone else is doing and get some positive feedback and there were some things that you got that you could improve on, but I think it just helped improve confidence."* **– P27**

*"It's quite unique to get that complete peer support 'cause quite often in general practice, it's other health professionals that we're kind of shadowing those consultations with or getting feedback from. I know perhaps for me because I work quite often in isolation ... So, it was really interesting to get pharmacist feedback."* **– P13**

*"I think it was also useful to see other pharmacists' consultation skills and see how they approach things because you know during the IP training things you spend time with doctors, nurses, some pharmacists but not so many other pharmacists. So, it's quite good to see how they would approach the same sort of thing to you and maybe learn different styles from them."* **– P15**

### *3.5.3.3 Improved decision-making skills*

Participants articulated that, following attendance at the SBE course, their ability to make a decision, as well as the importance and confidence around doing so was increased*:*

> *"I think it just allowed me to have that confidence that … sometimes is not a right or wrong decision, but it's also about a balance of risk … if it is a risky situation then you make sure that you follow up as well and then that kind of provides a bit of reassurance to yourself as well."* **– P23**

> *"… the idea of … black and white and then not having so much practice in the grey … the medics maybe have more experience and more confidence in making those decisions and I think we're kind of taught, there's a formulary, there's guidelines that you follow that step by step, but no real discussion or talk or experience about improvisation … this [SBE] will be a start."* **– P5**

> *"I would say it kind of gave me a bit of confidence around my decision making … I definitely think my decision making has got better but I think it was more just that it gave me a lot of confidence and what I was doing was correct and having that peer review really helped."* **– P2**

> *"[It made me realise] Actually, if you're not making a decision, you could be causing more harm than by making a decision."* **– P22**

### *3.5.3.4 Self-reflection*

Participants described points of self-reflection with respect to improving or adapting their practice following attendance at the simulation-based education course.

> *"I'm questioning myself more, reflecting on what I'm doing more, thinking 'right why I am not wanting to do that' and 'what would make me happy to do that' … rather than just reporting, I'm questioning my own work now a bit more then reflecting on what I can do to make the patients journey smoother."* **– P12**

*"… a phrase that springs to mind for me is self-reflection … you're getting feedback from other people that allows you to have a think yourself about feedback that you would give yourself."* **– P10**

*"… there was a lot of learning points … I reflected back on that [my behaviour] and how I how I approached the whole scenario. So that was quite interesting, and it was like a sort of experiment on my behaviour."* **– P17**

*"… just seeing other people having consultations definitely helped me assess what I do and how I can maybe do things differently."* **– P9**

#### *3.5.3.5 Improved integration within the multidisciplinary team*

Participants described how attendance at the SBE course helped them to engage better with individual members of the general practice team and the wider MDT in general practice and beyond.

*"I think it's; you know don't shy back going well the GP normally does that actually I could do that myself and I think by giving confidence to take on more things that will integrate you more into the team."* **- P15**

*"I think it allowed me confidence to put my skills into place and then they (GP's and nurses) were quite happy to support. I don't think it was a direct because I did the course, they were then supporting with it, but I think because it gave me the more confidence that then in turn allowed them to help me in the way that I needed."* **– P12**

*"… be aware of things that maybe you're not sure of and be comfortable to seek advice or help from other health professionals."* **- P29**

### 3.5.4 Theme 4: Social and environmental factors affecting the service delivery and role advancement of the clinical pharmacist working in general practice

A key set of sub-themes set out below link closely with the Environmental Context and Resources domain of the TDF: *"any circumstances of a person's situation or environment that discourages or encourages the development of skills and abilities, independence, social competence and adaptive behaviour"* (Atkins, et al. 2017).

#### *3.5.4.1 Support for attendance*

Participants described their experiences regarding the support they received to attend the SBE course:

> *"I was supported to do [attend SBE], and the whole health board group, like our whole management, was very happy with us going and doing it [SBE]"* **– P28**

> *"My leads made me aware that the [SBE] course was coming … they were quite happy for me to do it and take time out"* **– P29**

> *"I think because we had a local champion, and we were all doing it [SBE] together so that the whole team were involved, and it became almost like an event that that encourages people to do it as a collective."* **– P14**

Participants also described their thoughts on how ongoing support for attendance can be achieved and their perceived associated barriers to this:

> *"I think folks have got to prioritise their own professional development and put themselves out there to get experience of SIM … part of that would be helped by the organisation."* **– P14**

> *"… all the [SBE] courses tend to book up pretty quickly. I mean, in speaking to the people and other health boards, I think they've either we have booked on or struggled to book on because of capacity. So, it seems to be the demand outweighs the capacity"* ***– P2***

*"… permitting time to go to them [SBE courses] because I would say that it was probably one of the most valuable courses that I've been to"* **– P22**

*"… it just seems bizarre that GP surgeries can close for half a day and do protective learning time … I think it should be just common practice. Pharmacists need protected learning time."* **– P9**

### *3.5.4.2 Application of learning*

This sub-theme is further broken down in to three individual sub-sub themes which describe the support needed to apply the learning and the main barriers identified by participants which are currently preventing or making application of learning difficult, i.e., seeing patients face-to-face allowing the pharmacist to utilise the skills, knowledge and confidence gained at the SBE course.

*"… resources … whether that's room space, computers and what the GP's expectations from you are within the practice … are they expecting you to do with all the discharges and outpatient letters, in which case you don't have time to see patients and offer that kind of quality work that you can provide for them."* **– P7**

#### 3.5.4.2.1 Support for application of learning

Participants describe the support they have received following attendance at the simulation-based education course or conversely the lack of support they have received.

*"I'd certainly say that I feel supported by the GP's, but also the pharmacy leads that we work with"* **– P22**

*"I feel like on the back of it [SBE] and also full time as a prescriber the GP's have given me more opportunities but also supported me."* **– P26**

#### 3.5.4.2.2 Macro-, meso- and micro-level socio-institutional influences

Participants strongly detail their frustrations, concerns, and disappointment around the 'pharmacotherapy' element of the 2018 GP contract (The Scottish General Practitioners' Committee of the British Medical Association in conjunction with Scottish Government 2018) and how they feel this hinders them in their progression as GPCPs to work to the best of their ability, top of their license and in line with the training they receive and professional expectations.

> *"I think it needs to become more the norm and we do need more patient facing contact, but this is the problem with the pharmacotherapy service, and I think it's probably right across Scotland."* **– P25**

> *"I'd say some of the practices, some of the GP's are noticing like quite a high turnover in staff often the inability to retain pharmacists. So, they are more keen to give us patient facing time and start clinics [rather] than sitting doing DOCMAN and doing acutes all day - they're not going to be able to retain pharmacists. So, I think they're coming round to it and there might be a lot more that we could do … I think it depends on the practice and the GPs' and some are really proactive and then some are just 'no, you're pharmacist, you're not having a patient'."* **– P27**

> *"One of my practices in particular say they would rather not get clinic time because they see more value in our other tasks."* **– P26**

> *"So, they are expecting you to deal with all the discharges and outpatient letters, in which case you don't have time to see patients and offer that kind of quality work that you can provide for them."* **– P7**

> *"I think there's a lot of barriers at the moment. Organisationally …we are doing more pharmacotherapy work instead of … face to face as a whole within our team … getting to that point is really hard and it's such a shame because I think the SIM course proved that we're all more than able to do that."* **– P11**

> *"… that's the thing with the whole primary care improvement funding … a lot of these things weren't properly thought through at the time … I can see it probably being an issue across the whole of NHS Scotland"* **- P23**

*"… the pharmacotherapy [service], unfortunately I think has taken us back. I think there were people running clinics before this service came in. … if you're not doing something routinely, you do lose your confidence"* **– P25**

Participants detail their frustrations around how the 'organisation' and line managers could/ should support them more to work at a patient facing level in general practice. They also felt the role of the GPCP needs to be better supported and understood within the GP practices, the wider organisation and by the public:

*"… they're doing this course, so they need exposure to certain patients. It just needs to be the normal of part of the job that they get patient facing roles."* **– P13**

*"[GPCPs need] organisational support to actually use what we're learning … there's no point learning if we're not going to put into practice"* **– P15**

*"I think barriers are line managers and the risk aversion to change."* **– P20**

*"We do not have the support mechanisms in place the way the doctors and the nurses have. We had an incident recently and the pharmacist really hadn't made a mistake but had been involved in an incident that resulted in patient harm and was so devastated and we need to have those support mechanisms in place … that's another lack in our profession."* **– P25**

*"Changing the public perception … even amongst the team because there's some very forward-thinking GPs now, but there are some old school ones who don't maybe realise."* **– P30**

#### 3.5.4.2.3 Lack of appropriate accommodation to practice as a patient facing GPCP

Participants describe how they feel unsupported to deliver face-to-face patient appointments based on a significant lack of appropriate, available room space to work in.

*"I worked from home because there was no space yesterday for me."* **– P22**

*"There's so many people now involved in the multidisciplinary teams … it can be really challenging to get a room and I would like to get our technicians involved in some things as well, but that would involve another room … the logistics are quite challenging."* **– P25**

*"… room is an issue I'm currently sitting in a room that has a big electrical box."* **– P26**

*"… space … I think that falls into the recruitment and retention of pharmacists … you're going to probably end up leaving and looking for something else … that kind of vicious cycle. I think space can be a huge thing and the GPs priorities can lie elsewhere because solely they get paid for having medical students, so they're preferential to us doing the work."* **– P12**

### *3.5.4.3 The impact of Covid*

Participants described the impact they felt the Covid-19 pandemic has had on many aspects of the work including confidence, ability to undertake patient facing consultations, and ability to enhance or utilise prior learning.

*"I did all my IP during COVID, so I had very little experience [of face to face consultations]."* **– P26**

*"I felt it [SBE] built my confidence because I started the primary care role in 2019 just really found my feet … got into my surgeries in about December time [2019] and then Covid hit."* **– P19**

*"They don't have the confidence to see patients face to face. They've not been seen patients routinely. I think Covid's taken this way back."* **– P25**

*"I'm just always looking to expand my knowledge … getting feedback on conversation skills is really difficult just because of lack of face to face. I think I've kind of jumped at that opportunity to get some feedback which I think had been lacking over the past two years [during Covid]."* **– P2**

### 3.5.5 Theme 5: Optimism for the development of simulation-based education and the ongoing delivery of courses

This theme encompasses the following domains from the TDF framework (Cane et al., 2012): optimism, intentions, goals described by the participants regarding the future of SBE for them and others in the profession and beyond.

#### *3.5.5.1 Optimism for simulation-based education for the GPCP in the future*

Participants described their optimism that SBE would become part of the education and training pathway for GPCPs in the future.

> *"… the sim-based training would be particularly useful when you're starting out in general practice because that's when you need the most support."* **– P23**
>
> *"I mean I would advocate it [SBE] should be. given my experience, but I think there's got to be wider awareness of it for it to be fully integrated … there's got to be an understanding amongst line managers and the MDT of the importance of that before it could be then integrated fully in the GPCP or advanced frameworks."* **– P14**
>
> *"it's [SBE] something I would really benefit from and would continue to benefit from if it's something that was more widely available"* **– P3**
>
> *"I think the multiple sessions would be useful, little bits at a time that you can change and adapt"* **– P16**

### *3.5.5.2 Optimism for general pharmacy training in the future*

Participants describe their desire for more SBE to be delivered from undergraduate training through all stages of the pharmacists' career journey. In addition, participants also mention the opportunity to provide simulation-based education to pharmacy technicians.

> *"I think it [SBE] should be embedded from the very beginning of our training from undergraduate level"* **– P7**
>
> *"It's totally appropriate to do every level you could be doing this at the undergrad, preregistration foundation you know, going through your prescribing, doing your prescribing and post, and then even after that, as you work up and as advanced practitioner, yeah, it's suitable for every level."* **– P2**
>
> *"I think it's important that it's [SBE] done early on as well because quite a big part of it is giving constructive criticism and if you've got a group of people that are quite shy … you need to be told your negatives, everyone's got them … the more you do it [SBE], the more you get a bit braver at saying look, you could have done this like this … I think if you're bringing that in at uni level then they're just going to be used to that and they're just going to be able to take the criticism easier"* **– P19**
>
> *"Upskilling the technician team, I think it could be quite beneficial for them as well … to be able to interact with patients, that would be a good way forward."* **– P26**

### *3.5.5.3 Optimism for the development and delivery of multidisciplinary simulation-based education in the future*

Participants expressed significant enthusiasm towards the future development and delivery of SBE sessions involving other healthcare professionals beyond just the pharmacy profession.

> *"If we could get some multidisciplinary group [SBE] because then you help create the bigger health team, you know it's more than pharmacy"* **– P21**

*"… if we did these kinds of things with other health care professionals, then they could see first-hand what you're capable of and you could see what they do and learn from each other"* **– P22**

*"Sharing the experience with other healthcare professionals because … it would help each other understand roles better, prevent duplication and see … whose strengths lie where and how we can better … work together"* **– P23**

#### *3.5.5.4 Suggestions for future simulation-based education courses*

Participants were enthused by attendance at SBE and were keen to make suggestions for future SBE course development.

*"The situations or the cases, the snapshots that we had were things that we would come across on a day-to-day basis, but I suppose depending on the level of the grade of pharmacist that you were or that you are, I think also the scope of the clinical scenarios should get more challenging … I suppose sometimes you have to be thrown into the deep end to find out what you can or cannot cope with. So, I think it would have to be graduated scales almost."* **– P8**

*"If you had one and then next six months later had another to see if how you've improved and maybe ones that go into maybe more complex things or maybe disease specific things people have an interest in"* **– P2**

*"A progression of the training could be a complex clinical decision and you make that decision, then you then have to explain your clinical reasoning to your peers, and they give you feedback on it … So that people are more confident to make clinical decisions."* **- P20**

# Chapter 4: Discussion and Conclusion

## 4.1 Key Findings

This research provides data on the impact of SBE on the GPCP working at or towards an advanced clinical practice level in the general practice setting aligning with the Kirkpatrick Model (Kirkpatrick and Kirkpatrick 2016).

### 4.1.1 **Reaction** of the GPCP to the Simulation-based Education course

Reactions following attendance were reported through course evaluation feedback and interviews. It was clear from both these data collection methods, that the reactions from participants were, in general, extremely positive. All 30 participants in this research reported that SBE should become an integral educational tool available in the GPCP learning pathway.

### 4.1.2 **Learning**; the effect of the Simulation-based Education course on the GPCPs knowledge, confidence, experience, and skills

This work indicates that the GPCP SBE course positively contributes to the advancement of knowledge, confidence, and experience for GPCP clinical practice.

### 4.1.3 **Behaviour;** how the Simulation-based Education course affects the Tolerance of Ambiguity of the GPCP

Detailed statistical analysis of the pre and post adapted TAMSAD demonstrated that there was a statistically significant difference between pre and post values. This finding indicates that following attendance at SBE the GPCP tolerance of ambiguity, as measured by adapted TAMSAD scoring, improved.

### 4.1.4 Qualitative exploration of Kirkpatrick Levels 1-3

Through qualitative analysis it was identified that, following attendance at the SBE course, the GPCPs were much more aware of SBE and the ‘safe environment’ it can provide to translate learning into practice, describing the improvements they felt it brought to their confidence relating to clinical practice and decision-making. This provides evidence that SBE can improve the clinician's ability to make clinical decisions around prescribing, which as stated by Wright et al. is a necessary skill lacking within the pharmacy profession (Wright et al. 2019). The GPCPs were very positive about the benefits SBE could provide and felt it should be included in all stages of the pharmacy training program from undergraduate level through to all levels of the pharmacists training pathway. However, participants noted that there were operational areas that required organisational consideration, review and change to facilitate optimal service delivery, such as more appropriate clinical accommodation and changes to the pharmacotherapy service delivery.

Participants described support for attendance at SBE training from line managers and GP practices as being generally positive. It was highlighted by participants that other healthcare professionals have dedicated opportunity to undertake education and training in protected time and therefore consideration to training needs and hence protected time to undertake necessary training needed to be both recognised and provided by both the organisation / profession and line managers.

Participants also noted the impact the Covid-19 pandemic had on their patient facing clinical practice and felt the SBE course was useful to help them increase their confidence in this area again. Participants were optimistic that SBE would become an integral part of the pharmacist’s education and training journey moving into the future and offered some suggestions of how to further develop the SBE courses relating to their role enhancement in the general practice setting, such as MDT SBE. This aligns with highlighted education and training requirements, by experts in the field, to support the pharmacist in the field of clinical decision making / clinical reasoning skills (Rutter and Harrison 2020), (Rutter et al. 2022), (GPhC 2021).

## 4.2 Strengths and limitations

### 4.2.1 Strengths

The tools used to both qualitatively and quantitatively achieve the aim were evidence based and robust throughout. Levels 1-3 of the Kirkpatrick Model (Kirkpatrick and Kirkpatrick 2016) was studied using quantitative data analysis and supported by the addition of qualitative analysis in the form of interviews based on the TDF. Both the Kirkpatrick Model (Kirkpatrick and Kirkpatrick 2016) and the TDF (Cane et al. 2012) are theory driven approaches which enhance the robustness of this research in assessing the impact of training the healthcare fields.

Similar studies carried out, mainly in medicine and some in nursing, in addition to the initial pilot of the SBE course for GPCPs, held in 2020, helped to frame the research aim and objectives as well as the session development and delivery. Having the opportunity to link in with SCSCHF was a significant advantage bestowed upon the researcher in both the development phase and the immersive phase of session delivery as well as data collection and analysis.

The researcher has had strong support from experienced research supervisors and collaborators to ensure the focus remained relevant to practice and research aims and objectives throughout.

Out of 31 participants attending the SBE course, 30 participants took part in one or more elements of the research. Those participants were based across a wide geographical spread encompassing different health board therefore ensuring a mix of GPCPs working with patients from differing socio-economic backgrounds in both remote and rural healthcare as well as urban healthcare. The number of participants in each stage of analysis allowed for statistical significance to be achieved in the data analysis and a good spread of statements / answers to be reviewed qualitatively from the interviews and course evaluation free text.

### 4.2.2 Limitations

Only one SBE course was delivered for each participant. It was clear that participants want and feel they need more SBE sessions to continue to improve and enhance their confidence and competence.

The SBE course delivered to each participant only covered 4 scenario's which could have resulted in limited value for some clinicians who won't work in these therapeutic areas or who have extensive experience already working in this area. It is worth noting however, that participants reported that exposing them to scenario's they were not used to was good for their self-growth meanwhile exposing them to scenarios they do currently deal with helped reassure them of their ability or provided them with some options to adapt and improve their current practice.

Whilst most GPCPs felt the SBE course was pitched just right, a small number felt it was too simple for their level of clinical competence / knowledge. Whilst this could be seen as a limitation to the learning of the individual with more experience it could also be seen as a way for this level of clinician to reflect on their current behaviours and consider if any change is required. Having a mix of less and more experienced in the sessions was also considered by some participants as a good opportunity for the less experienced clinician to learn from their peers currently working at a higher level and potentially provide a form of 'leading by example' and highlight the need to advance.

Several participants referred to the course advertisement requiring improvement to minimise anxieties such as 'fear of the unknown' to be allayed. Those delivering the course in the future will need to consider advertising of the course in a way that attendance will be encouraged, fears will be allayed but that too much information is not disclosed to reduce the positive impact the SBE course may have.

Participation in all aspects of the data collection, from all those willing to take part in the research wasn't 100% and on reflection the researcher would provide the pre and post questionnaires on the day of attendance at the SBE course as opposed to by email prior to and after the course. The job of the GPCP is busy and this was extremely evident when trying to arrange suitable times for interviews to be held. The GPCP reported high workload burden from the GMS contractual requirement of 'Pharmacotherapy' and the lack of time to spend on other areas of work that are not 'Pharmacotherapy' task related.

Another limitation which is important to report on is that some aspects of this research will not be transferrable to other countries which, for example, do not have pharmacist prescribing rights or pharmacists working at an advanced level in general practice.

The TAMSAD was adapted and a soft, face and content validation was completed by a field of experts in the fields of education, clinical practice, and research within medical, nursing and pharmacy professions. However, it is worth noting that the adapted TAMSAD did not go through full validation using methods undertaken by Hancock et al. which would have been the ideal approach should time and researcher capacity have allowed (Hancock et al. 2014).

It is also of note that the researcher works in the field in which this research is being undertaken and therefore there is potential for insider bias. To mitigate this the researcher's work, in particular the thematic analysis of the interview transcripts and quotes selected, was peer reviewed by experienced research supervisors.

Generalisability refers to the extent to which the results can be applied to settings, individuals, or times beyond those specifically examined in the research. This research specifically focussed on the impact of SBE on the GPCP which may be a limitation to how broadly the results can be applied. However, given that the findings concur with similar research undertaken in this area and that the research methods are robust and replicable, the generalisability of the findings go some way in supporting the use of SBE across the whole of the pharmacy profession to improve clinical decision making in prescribing for the PIP.

## 4.3 Interpretation of results

Reporting on the interpretation of the results will align with the four levels of the Kirkpatrick Model (Kirkpatrick and Kirkpatrick 2016) which was employed as the basis for achieving the aim which was 'to explore the impact of a simulation-based education course on the GPCP'.

The positive impact relating to the reaction of the participants of SBE in the healthcare setting and beyond has been reported in a number of studies through the years.

Of note the facilitators delivering the SBE courses in this research study were all trained to a high standard specifically in delivery or SBE through attendance at nationally recognised SBE facilitation courses delivered by the SCSCHF team. The importance of this could be seen to provide rational around the high levels of satisfaction regarding the facilitator expertise and the benefit they added to the participants experience and learning. Findings from a recent scoping paper, commissioned and funded by Health Education England (HEE) in the UK, described the perception by participants being that the quality of the SBE could be improved by investment in greater education of staff who take the role of facilitation (Astbury J. et al. 2019). It is important to take note of this and ensure the high standard of facilitator experience is maintained if SBE courses are rolled out following this study.

SBE should feel like a safe environment to practice in, be authentic and should also feel immersive matching definitions such as: *"simulation is a technique—not a technology—to replace or amplify real experiences with guided experiences that evoke or replicate*

*substantial aspects of the real world in a fully interactive manner"* (Gaba D.M. 2004). Participants reported that the SBE course experience and environment felt authentic, immersive, and safe which aligns with the core values expected of SBE delivery.

Increase in knowledge, confidence, experience, and skills was evidenced by the participants completion of the pre and post questionnaires in addition to theme 3 of the interviews; consequences of attendance at a SBE course for the GPCP. These findings are aligned with similar in the pilot study which was the driver for undertaking this research (Rushworth et al. 2021). Findings from this study also demonstrated an increase in confidence of the GPCP through pre and post questionnaires and through qualitative comments provided by the participants after the course. Other similar findings have been observed in this area of research supporting the generalisability of the research findings (Astbury J. et al. 2019).

The adapted TAMSAD in addition to post course interviews' themes 4 and 5 were used for evaluation of the behavioural changes applied by the participants allowing them to apply their learning into practice. In addition, this research objective also provided insight into barriers and facilitators to support both the attendance at SBE learning and the application of learning gained in the real world. The adapted TAMSAD tool was developed to cover a range of healthcare professionals and not just pharmacists which although not fully validated yet, does add to the generalisability of my findings as the principles of the work around the SBE are applicable and have been researched in many other professions. This adaptation of the TAMSAD to cover a range of healthcare professionals was also to increase the generalisability of the research should other sectors of pharmacy such as hospital or Community Pharmacy or even other HCP's wish to replicate the research in their firled of practice.

It is known that ambiguity is intrinsic to skilful clinical decision making (Hancock et al. 2015). Increased tolerance of ambiguity has been shown to translate into the clinician demonstrating a better ability to work in the 'shades of grey' when the answer is not so obvious or clear. Tolerance of ambiguity has also been shown to have significance in relation to the psychological well-being of the doctor (Hancock and Mattick 2019). Therefore, for the pharmacist, increased tolerance of ambiguity is thought to have beneficial effects on their ability to work more confidently, making decisions where there is an element of uncertainty and possibly also practice in a state of greater psychological well-being.

With reference to changes in the tolerance of ambiguity, aligning with similar findings from a recent similar study in this area of research (Tallentire 2022), the findings from both studies demonstrated that the participants tolerance of ambiguity increased following participation in SBE. The relevance of this improvement in tolerance of ambiguity helping the clinician work

more comfortable and effectively in areas of uncertainty is described by the developers of the TAMSAD (Hancock 2014) and back in the 1990's Geller et al. stated that the clinician with a higher tolerance of ambiguity should be able to provide improved *'quality of care for ambiguous conditions'* (Geller. et al. 1990).

Similar frustrations around the social and environmental influences which affect the opportunity for the GPCP to apply the learning gained from SIM were described by Rushworth et al. in 2022 in a qualitative study of behavioural determinants exploring the skills gained from attendance at Advanced Clinical Examination and Assessment courses (Rushworth et al. 2022). Participants in this research study reported feelings of frustration and angst around the restrictions they felt the pharmacotherapy element of the GMS contract placed on their ability to work as advanced clinical practice pharmacists delivering face to face clinical care to patients in general practice. Pharmacists reported that task burden in areas such as Medicines Reconciliation of discharge letters and re-authorisation of acute prescriptions were the limiting factors to them utilising the learning gained from the SBE course. Participants felt that this lack of support organisationally at GP practice, board and government level was hindering their ability to provide the highest level of quality care they were both trained and passionate about delivering. This was described as 'policy alienation' by Rushworth et al. (Rushworth et al. 2022), a concept described in more detail by Lars Tummers in 2012 where he describes the frequency with which professionals struggle to work with new policies often resulting in reduced output in the workplace (Tummers 2012). The concepts Tummers details that policy alienation are associated with are: '*strategic powerlessness, tactical powerlessness, operational powerlessness, societal meaninglessness and client meaninglessness.*' (Tummers 2012). These concepts resonate closely with the descriptions given by the participants in the interviews.

The key findings were that of GPCP optimism that SBE be added to the GPCP framework, to the general pharmacy education and training programs and that more SBE courses be developed to include members of the MDT. This optimism aligns with similar optimism from healthcare professions such as Medicine (Mehay and Burns 2009) and Nursing (Aebersold 2018).

## 4.4 Further research

The GPCP participants noted the potential for SBE to be delivered from undergraduate through to all aspects of post-graduate frameworks in the pharmacy professions. The participants also noted the potential benefit for the provision of SBE to pharmacy technicians and pharmacy support workers as well as combining SBE courses with other members of the MDT. For all the afore mentioned areas it would be good to continue research in these areas to allow for this to be further explored and developed.

The TAMSAD tool used was specifically developed by Hancock et al. for measuring the tolerance of ambiguity of medical students and doctors (Hancock et al. 2014). Although the researcher was able to perform a level of validation of the TAMSAD tool for use in Pharmacists, this was classed as a 'soft face and content validation' of TAMSAD for clinicians. The researcher recommends that a more robust validation, aligned to Hancock et al. (Hancock et al. 2014), original TAMSAD validation study be performed to allow for use across multiple healthcare profession settings.

## 4.5 Impact of the research

Carrying out research and the subsequent impact of that research is essential in the NHS to ensure appropriate resources are commissioned / allocated to improve service output, optimise spend and resource and enhance staff health and wellbeing which will help to retain said staff in the service (Cruz et al. 2017). The RPS state that '*the existing workforce must be supported to undertake training and qualify as pharmacist independent prescribers'* and whilst they don't make mention of those who are qualified but not fully utilising their PIP qualification, supporting this cohort of pharmacists is also of great importance. The RPS advise that the necessity to support the existing workforce *'will allow new and different service models to be commissioned'.* This research supports the commissioning of SBE in this context. (RPS 2024).

Going back to the quote: *"simulation technology is a key contributor to quality health professions education; the integration of simulation into existing curricula is challenging; more and better research is needed to document educational effectiveness, and outcome measurement needs improvement"* (McGaghie et al. 2016). This research has gone some

way to confirming that SBE is ‘a key contributor’ to the quality of education provided to the GPCP and has documented educational effectiveness in addition to trialling some outcome measures to evidence this effectiveness.

Research impact is defined by the Economic and Social Research council (ESRC) as *“the demonstrable contribution that excellent research makes to society and the economy”* (ESRC 2022). The ESRC details the research impact through the following headings: ‘academic impact’, ‘economic and societal impact’, ‘instrumental impact’, ‘conceptual impact’ and capacity building’ (ESRC 2022). From the key findings of this research, it has been confirmed that the GPCP felt strongly that SBE could and should be a part of the educational delivery to pharmacists from undergraduate education through to consultant level practice aligning with the academic impact afore mentioned. The ‘economic and societal impact’ along with ‘capacity building’ was also highlighted in the key findings which demonstrated positive impact on knowledge, confidence, and experience in addition to positive changes of tolerance of ambiguity of the GPCP participants following attendance at SBE. From the presentation of my results at National and International conferences through poster presentations and oral presentations (see page 7: disseminations relevant to this work) in addition to my feedback of research results to NES, RGU and individual health boards I hope to see some ‘instrumental and conceptual impact’ moving forward which will help to positively impact changes to service delivery and behavioural changes amongst senior leadership in supporting attendance at SBE courses for their pharmacy teams.

### 4.5.1 Direct impact on the practice of the GPCP

All areas of this research indicated that GPCPs felt their confidence and competence to deliver patient facing care in more complex clinical scenarios increased following SBE. GPCPs described reflecting post SBE course on their abilities and their learning needs. Some reported their decision to or ambition to undertake further learning in specific areas of weakness which were highlighted on the SBE course either directly to them by peers or indirectly through their own self-reflection. The reported changes in constructs of knowledge, confidence, and experience in addition to the change in the GPCPs tolerance of ambiguity following the SBE were all supportive of the benefits SBE can offer to the GPCP in the patient facing element of their job role, with the main benefit being the use of SBE for

improving decision making in prescribing. Overall, the results of this research would suggest that the impact of SBE on the GPCP was of a positive nature.

### 4.5.2 Impact on the overall training of pharmacists in NHS Scotland

SBE course availability is on the increase and is now ‘on the map’ so to say, within the development of education and training programs for pharmacy undergraduates as well as foundation and advanced frameworks. As knowledge of the educational tool increases along with funding allocation, changes to education and training pathways and organisational policy changes it could be predicted that SBE will become a highly utilised education tool for pharmacy teams moving forwards. This aligns directly with the GPhC standards for initial pharmacy education and training which directs the need for a greater focus to be placed on the important education and training of clinical decision-making skills (GPhC 2021). With all pharmacists qualifying in 2026 as Pharmacist Independent Prescribers this research would support the addition of SBE into the curricula for the overall education and training of Pharmacists in NHS Scotland. The RPS support this education and training reform by stating that it will be important to enable the pharmacist prescribers to effectively use their PIP qualification and that *‘funded learning time for pharmacists must become the norm and embedded within workforce planning’* (RPS 2024). The generalisable nature of the findings of this research strongly supports the use of SBE to meet this requirement.

## 4.6 Conclusion

For any innovative training provision, it is important to ensure that the training is seen as valuable to the participants and the organisation thus confirming whether commissioning and provision of this training, to improve clinical decision-making for prescribing, is worthwhile and hence justifiable.

The quantitative and qualitative results from this mixed method study support the outcomes, aligned with the Kirkpatrick Model (Kirkpatrick and Kirkpatrick 2016). The reactions of the participants following attendance at the SBE course were, in general, extremely positive indicating the course venue, delivery, content and facilitation was good. Participants also

demonstrated and described positive changes to learning and behaviour following attendance at a SBE course. In addition, participants reported perceived changes to their clinical practice and the benefit they felt this could have on patients, peers, and the general practice multidisciplinary team.

The key findings of this research evidence that SBE positively impacts the GPCP, supporting them to work at an advanced clinical practice, patient facing level and should be considered as an educational tool used to support completion of their training framework.

It is, however, clear from the findings that review of service delivery models aligned to policy require review and adaptation urgently to ensure GPCPs are supported to provide the desired clinical services aligned to their advanced roles. As suggested by the research participants there needs to be greater opportunity to attend SBE across the whole of the pharmacy profession, from undergraduate through to consultant level. This will require more courses, more scenario's, more trained facilitators, and more time allocated to training and development of the pharmacist moving forwards.

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# Appendices

## Appendix 1: Literature Review Concept Map

| **Identify key terms suitable for your proposal** | **Categories/combinations of terms related to your key term** | **Highlight here which search engines you have used and the relevant number of 'hits'** | | | | **Total number of hits across search engines.** |
|---|---|---|---|---|---|---|
| **Core term**<br><br>**e.g.** | **Sub-terms or MESH* terms (see below)**<br><br>**e.g.** | **MEDLINE** | **CINAHL** | **IPA** | **Google Scholar** | **TOTAL** |
| 1. **SIMULATION** | Simulation | **573,631** | **57,321** | **5,481** | | |
| | "Simulation Education" | **479** | **300** | **8** | | |
| | "Simulation-based learning" | **502** | **380** | **8** | | |
| | "Simulation-based education" | **608** | **354** | **2** | | |
| | "Simulation-based training" | **1,325** | **626** | **6** | | |
| | "Recreation simulation" | **170** | **28** | **0** | | |
| | "Mock simulation" | **4** | **2** | **6** | | |
| | "MH Simulation Training" | **10,948** | **614** | **20** | | |
| | "MH High Fidelity Simulation Training" | **339** | **4,924** | **2** | | |
| | "MH Patient Simulation" | **5,399** | **3,945** | **57** | | |
| | "MH Competency based education" | **4,377** | **15,737** | **18** | | |
| | **1.1 'sub terms' above combined** | **455,709** | **48,037** | **5,774** | | |
| **2.HEALTHCARE** | Healthcare | **519,848** | **203,356** | **35,042** | | |
| | "Healthcare Education" | **1,150** | **594** | **12** | | |
| | "Healthcare Training" | **177** | **113** | **2** | | |
| | "Simulation in Healthcare" | **1,144** | **104** | **1** | | |
| | MH Models, Educational | **10,463** | **4,289** | **1** | | |
| | Pharmac* | **5,052,426** | **356,364** | **550,884** | | |
| | MH Pharmacy | **9,252** | **61** | **146,163** | | |
| | MH Pharmacists | **19,631** | **17,474** | **65,811** | | |
| | "Clinical Pharmacist" | **2,776** | **952** | **2,206** | | |
| | MH Students, Pharmacy | **4,000** | **1,476** | **2,923** | | |
| | MH Pharmacy Research | **108** | **2,598** | **478** | | |
| | MH Education, Pharmacy | **6,929** | **1,966** | **893** | | |
| | MH Schools, Pharmacy | **1,543** | **241** | **1,626** | | |
| | MH Licensure, Pharmacy | **250** | **218** | **59** | | |
| | MH Clinical Clerkship | **5,531** | **1,063** | **91** | | |
| | Medic* | **13,032,166** | **1,159,297** | **229,528** | | |
| | MH Medicine | **50,107** | **7,786** | **71,629** | | |
| | MH Schools, medical | **26,955** | **6,347** | **35** | | |
| | Doctor | **144,600** | **64,452** | **4,613** | | |
| | Nurs* | **1,060,994** | **943,481** | **13,808** | | |
| | MH Nursing | **51,684** | **1,060** | **8,881** | | |
| | MH Schools, Nursing | **6,056** | **12,426** | **6** | | |
| | MH Nurse Clinicians | **8,423** | **666** | **7** | | |
| | MH Nurse practitioners | **18,431** | **19,549** | **291** | | |
| | MH Nurse Specialists | **233** | **436** | **19** | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | **2.1 'sub terms' above combined** | **17,126,604** | **2,455,576** | **620,705** | | |
| 3. **GENERAL PRACTICE** | General Practice | **107,751** | **31,202** | **3,556** | | |
| | MH "general practice" | **77,104** | **2,002** | **1,296** | | |
| | MH "General practitioners" | **9,397** | **876** | **1,237** | | |
| | "Primary Care" | **208,696** | **95,140** | **6,038** | | |
| | MH "Primary health care" | **86,567** | **69,862** | **418** | | |
| | MH "Primary Care Nursing" | **547** | **4,749** | **9** | | |
| | MH "Physicians, Primary Care" | **4,107** | **4,436** | **179** | | |
| | "Primary Care Pharmacist" | **35** | **17** | **43** | | |
| | "General Practice Pharmacist" | **19** | **6** | **13** | | |
| | "General Practice Clinical Pharmacist" | **1** | **1** | **1** | | |
| | "Prescribing Support Pharmacist" | **3** | **1** | **1** | | |
| | MH "Community Health Services" | **321,474** | **461,608** | **18** | | |
| | **3.1 'sub terms' above combined** | **696,689** | **570,710** | **10,269** | | |
| 4. **EVALUATION** | Evaluation | **1,667,284** | **1,050,772** | **160,771** | | |
| | MH "Program Evaluation" | **81,137** | **45,475** | **113** | | |
| | "Validated Tools" | **1,643** | **787** | **26** | | |
| | "Data Collection Tools" | **967** | **760** | **14** | | |
| | MH "Data Collection" | **2,413,508** | **668,692** | **14,135** | | |
| | MH "Data Analysis" | **3,249** | **23,904** | **1,736** | | |
| | "Educational Research Tool" | **119,305** | **46,293** | **1,238** | | |
| | **3.1 'sub terms' above combined** | **1,682,386** | **1,051,731** | **172,368** | | |
| **Combined searches** | **1.1 and 2.1 and 3.1 and 4.1** | **680** | **394** | **16** | | |

## Appendix 2: Adapted TAMSAD

Please indicate your agreement with the following statements from 'strongly disagree' to 'strongly agree' by placing a X in the relevant box.

| STATEMENT | Strongly disagree | Disagree | Neutral | Agree | Strongly agree |
|---|---|---|---|---|---|
| I would enjoy tailoring treatments to individual patient needs | | | | | |
| I have a lot of respect for senior clinicians who always come up with a definite answer | | | | | |
| I would be comfortable if a clinical educator / supervisor set me a vague assignment or task | | | | | |
| A good clinical educator / supervisor is one who challenges your way of looking at clinical problems | | | | | |
| What we are used to is always preferable to what is unfamiliar | | | | | |
| I feel uncomfortable when people claim that something is 'absolutely certain' in clinical practice | | | | | |
| A clinician who leads an even, regular work life with few surprises, really has a lot to be grateful for | | | | | |
| I think in clinical practice it is important to know exactly what you are talking about at all times | | | | | |
| I feel comfortable that in clinical practice there is often no right or wrong answer | | | | | |
| A patient with multiple diseases would make a clinician's job more interesting | | | | | |
| I am uncomfortable that a lack of clinical knowledge about some diseases means we can't help some patients | | | | | |
| The unpredictability of a patient's response to medication would bring welcome complexity to a clinician's role | | | | | |
| It is important to appear knowledgeable to patients at all times | | | | | |
| Being confronted with contradictory evidence in clinical practice makes me feel uncomfortable | | | | | |

| STATEMENT | Strongly disagree | Disagree | Neutral | Agree | Strongly agree |
|---|---|---|---|---|---|
| I like the mystery that there are some things in clinical practice we'll never know | | | | | |
| Variation between individual patients is a frustrating aspect of clinical practice | | | | | |
| I find it frustrating when I can't find the answer to a clinical question | | | | | |
| I am apprehensive when faced with a new clinical situation or problem | | | | | |
| I feel uncomfortable knowing that many of our most important clinical decisions are based upon insufficient information | | | | | |
| No matter how complicated the situation, a good clinician will be able to arrive at a yes or no answer | | | | | |
| I feel uncomfortable when textbooks or experts are factually incorrect | | | | | |
| There is really no such thing as a clinical problem that can't be solved | | | | | |
| I like the challenge of being thrown in the deep end with different clinical situations | | | | | |
| It is more interesting to tackle a complicated clinical problem that to solve a simple one | | | | | |
| I enjoy the process of working with a complex clinical problem and making it more manageable | | | | | |
| A good job is one where what is to be done and how it is to be done are always clear | | | | | |
| To me, clinical practice is black and white | | | | | |
| The beauty of clinical practice is that it's always evolving and changing | | | | | |
| I would be comfortable to acknowledge the limits of my clinical knowledge to patients | | | | | |

## Appendix 3: Expert Feedback to adapted TAMSAD

# Tolerance of ambiguity

Showing 7 of 7 responses

Showing **all** responses

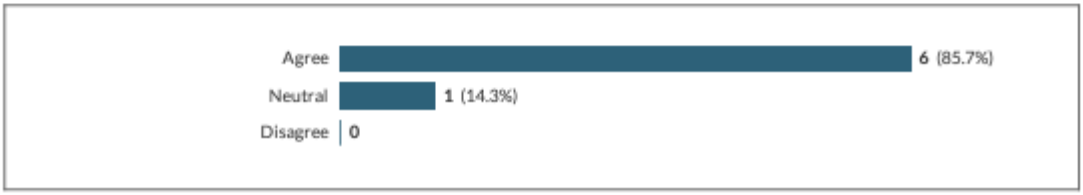
Showing **all** questions

Response rate: 7%

**1** Please indicate your agreement (Agree, Neutral, Disagree) with NEW or UNCHANGED statements and where you're NEUTRAL / DISAGREE suggest alternative wording

**1.1** ORIGINAL: I would enjoy tailoring treatments to individual patient problems (UNCHANGED)

**1.1.a** ORIGINAL: I would enjoy tailoring treatments to individual patient problems (UNCHANGED) - Level of agreement with each statements

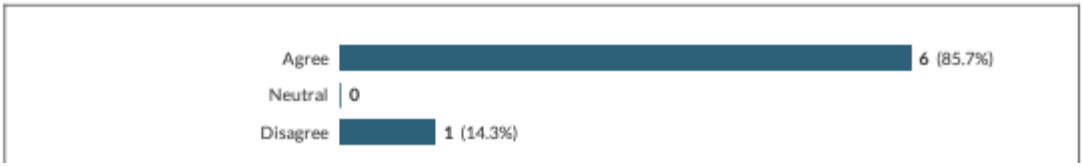



**1.1.b** ORIGINAL: I would enjoy tailoring treatments to individual patient problems (UNCHANGED) - Suggestions for alternative wording of statements

| Showing 1 response | |
|---|---|
| Suggest "problems" changed to "needs" or "requirements" | 817407-817398-87288343 |

**1.2** ORIGINAL: I have a lot of respect for consultants who always come up with a definite answer; NEW: I have a lot of respect for senior clinicians who always come up with a definite answer

**1.2.a** ORIGINAL: I have a lot of respect for consultants who always come up with a definite answer; NEW: I have a lot of respect for senior clinicians who always come up with a definite answer - Level of agreement with each statements

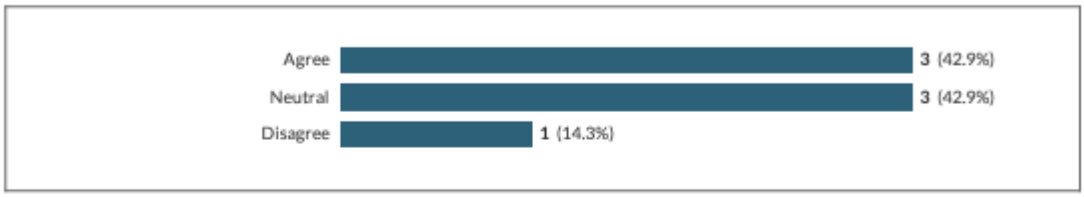



**1.2.b** ORIGINAL: I have a lot of respect for consultants who always come up with a definite answer; NEW: I have a lot of respect for senior clinicians who always come up with a definite answer - Suggestions for alternative wording of statements

| Showing 1 response | |
|---|---|
| I have a lot of respect for senior clinicians who are confident in weighing the risks and benefits of a course of action | 817407-817398-87670775 |

1.3 ORIGINAL: I would be comfortable if a clinical teacher set me a vague assignment or task (UNCHANGED)

1.3.a ORIGINAL: I would be comfortable if a clinical teacher set me a vague assignment or task (UNCHANGED) - Level of agreement with each statements

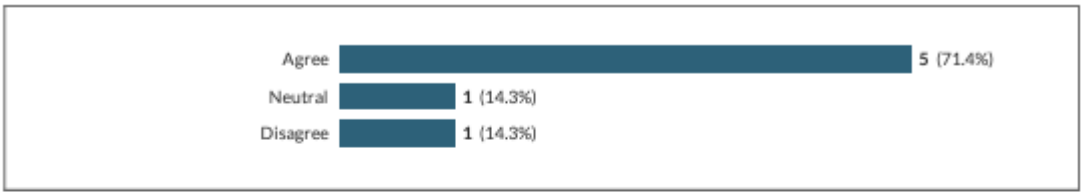



1.3.b ORIGINAL: I would be comfortable if a clinical teacher set me a vague assignment or task (UNCHANGED) - Suggestions for alternative wording of statements

| Showing all 4 responses | |
|---|---|
| "clinical teacher" should be changed to "clinical supervisor" | 817407-817398-87288343 |
| This is fine but I think the term for nursing is Clinical Educator? | 817407-817398-87499901 |
| clinical educator insetad of teacher | 817407-817398-87600424 |
| I would be comfortable is a clinical teacher set me an assignment with some identifiable uncertainties | 817407-817398-87670775 |

1.4 ORIGINAL: A good clinical teacher is one who challenges your way of looking at clinical problems (UNCHANGED)

1.4.a ORIGINAL: A good clinical teacher is one who challenges your way of looking at clinical problems (UNCHANGED) - Level of agreement with each statements

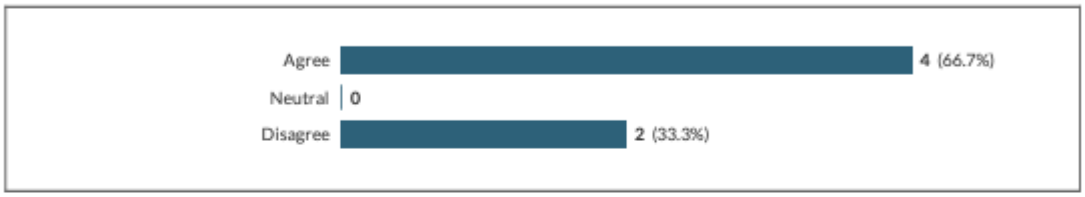



1.4.b ORIGINAL: A good clinical teacher is one who challenges your way of looking at clinical problems (UNCHANGED) - Suggestions for alternative wording of statements

| Showing all 2 responses | |
|---|---|
| "clinical teacher" should be changed to "clinical supervisor" | 817407-817398-87288343 |
| suggest clinical eductor instead of teacher | 817407-817398-87600424 |

1.5 ORIGINAL: What we are used to is always preferable to what is unfamiliar (UNCHANGED)

1.5.a ORIGINAL: What we are used to is always preferable to what is unfamiliar (UNCHANGED) - Level of agreement with each statements




1.5.b ORIGINAL: What we are used to is always preferable to what is unfamiliar (UNCHANGED) - Suggestions for alternative wording of statements

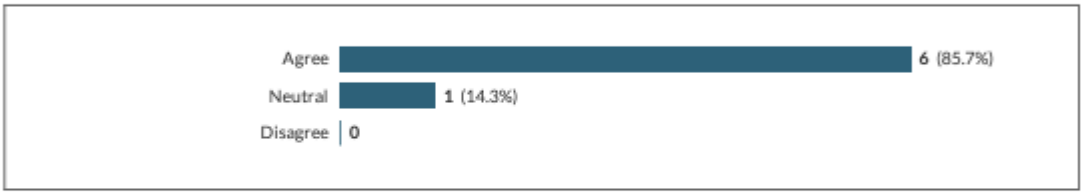
| Showing 1 response | |
|---|---|
| The term "always" is seldom appropriate in clinical practice (see next statement). It might be less safe for patients if a clinician adopts a practice with which he/she is unfamiliar.... | 817407-817398-87697852 |

1.6 ORIGINAL: I feel uncomfortable when people claim that something is 'absolutely certain' in medicine; NEW: I feel uncomfortable when people claim that something is 'absolutely certain' in clinical practice

1.6.a ORIGINAL: I feel uncomfortable when people claim that something is 'absolutely certain' in medicine; NEW: I feel uncomfortable when people claim that something is 'absolutely certain' in clinical practice - Level of agreement with each statements

1.7 ORIGINAL: A doctor who leads an even, regular work life with few surprises, really has a lot to be grateful for; NEW: A clinician who leads an even, regular work life with few surprises, really has a lot to be grateful for

1.7.a ORIGINAL: A doctor who leads an even, regular work life with few surprises, really has a lot to be grateful for; NEW: A clinician who leads an even, regular work life with few surprises, really has a lot to be grateful for - Level of agreement with each statements

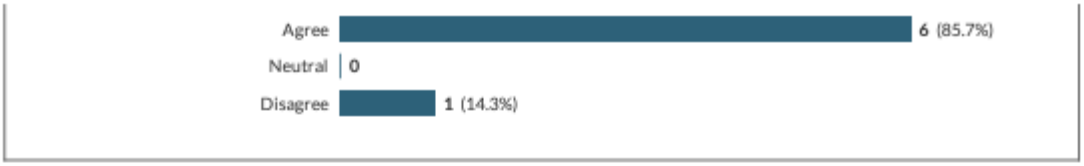



1.7.b ORIGINAL: A doctor who leads an even, regular work life with few surprises, really has a lot to be grateful for; NEW: A clinician who leads an even, regular work life with few surprises, really has a lot to be grateful for - Suggestions for alternative wording of statements

| Showing all 2 responses | |
|---|---|
| Clinician is ok for nursing. Uncertain for other HCPs | 817407-817398-87499901 |
| ....but is likely to become rather bored! | 817407-817398-87697852 |

1.8 ORIGINAL: I think in medicine it is important to know exactly what you are talking about at all times; NEW: I think in clinical practice it is important to know exactly what you are talking about at all times

1.8.a ORIGINAL: I think in medicine it is important to know exactly what you are talking about at all times; NEW: I think in clinical practice it is important to know exactly what you are talking about at all times - Level of agreement with each statements




1.8.b ORIGINAL: I think in medicine it is important to know exactly what you are talking about at all times; NEW: I think in clinical practice it is important to know exactly what you are talking about at all times - Suggestions for alternative wording of statements

| Showing 1 response | |
|---|---|
| I think in clinical practice it is important to know the boundaries of normal practice and where there are uincertainties | 817407-817398-87670775 |

1.9 ORIGINAL: I feel comfortable that in medicine there is often no right or wrong answer; NEW: I feel comfortable that in clinical practice there is often no right or wrong answer

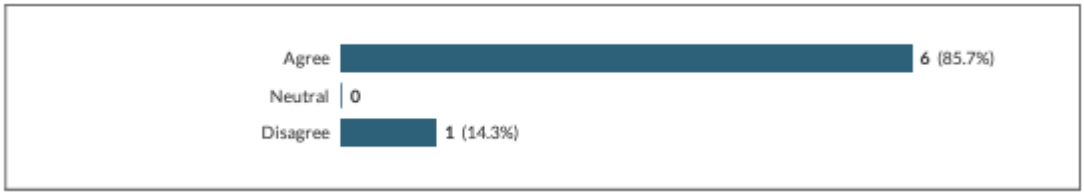
1.9.a ORIGINAL: I feel comfortable that in medicine there is often no right or wrong answer; NEW: I feel comfortable that in clinical practice there is often no right or wrong answer - Level of agreement with each statements


1.9.b ORIGINAL: I feel comfortable that in medicine there is often no right or wrong answer; NEW: I feel comfortable that in clinical practice there is often no right or wrong answer - Suggestions for alternative wording of statements

*No responses*

1.10 ORIGINAL: A patient with multiple diseases would make a doctor's job more interesting; NEW: A patient with multiple diseases would make a clinician's job more interesting

1.10.a ORIGINAL: A patient with multiple diseases would make a doctor's job more interesting; NEW: A patient with multiple diseases would make a clinician's job more interesting - Level of agreement with each statements



1.10.b ORIGINAL: A patient with multiple diseases would make a doctor's job more interesting; NEW: A patient with multiple diseases would make a clinician's job more interesting - Suggestions for alternative wording of statements

| Showing 1 response | |
|---|---|
| A patient with multiple diseases requires skilled management by the clinician | 817407-817398-87670775 |

1.11 ORIGINAL: I am uncomfortable that a lack of medical knowledge about some diseases means we can't help some patients; NEW: I am uncomfortable that a lack of clinical knowledge about some diseases means we can't help some patients

1.11.a ORIGINAL: I am uncomfortable that a lack of medical knowledge about some diseases means we can't help some patients; NEW: I am uncomfortable that a lack of clinical knowledge about some diseases means we can't help some patients - Level of agreement with each statements


1.11.b ORIGINAL: I am uncomfortable that a lack of medical knowledge about some diseases means we can't help some patients; NEW: I am uncomfortable that a lack of clinical knowledge about some diseases means we can't help some patients - Suggestions for alternative wording of statements

| Showing 1 response | |
|---|---|
| Uncertainties in the best course of management for clinical conditions is frustrating because it limits how much we can help some patients | 817407-817398-87670775 |

1.12 ORIGINAL: The unpredictability of a patient's response to medication would bring welcome complexity to a doctor's role; NEW: The unpredictability of a patient's response to medication would bring welcome complexity to a clinician's role

ORIGINAL: The unpredictability of a patient's response to medication would bring welcome

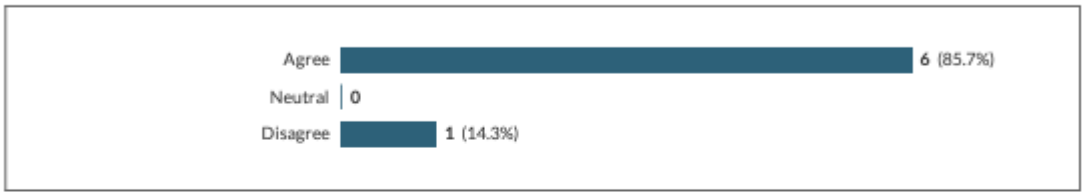
1.12.a complexity to a doctor's role; NEW: The unpredictability of a patient's response to medication would bring welcome complexity to a clinician's role - Level of agreement with each statements


1.12.b ORIGINAL: The unpredictability of a patient's response to medication would bring welcome complexity to a doctor's role; NEW: The unpredictability of a patient's response to medication would bring welcome complexity to a clinician's role - Suggestions for alternative wording of statements

| Showing 1 response | |
|---|---|
| The unpredictability of a response to medication requires skilled management and patient communication by the clinician | 817407-817398-87670775 |

1.13 ORIGINAL: It is important to appear knowledgeable to patients at all times (UNCHANGED)

1.13.a ORIGINAL: It is important to appear knowledgeable to patients at all times (UNCHANGED) - Level of agreement with each statements

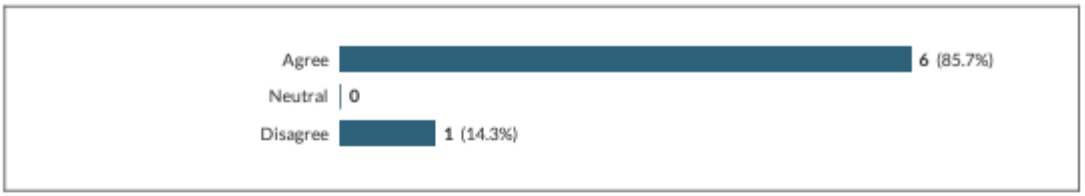



1.13.b ORIGINAL: It is important to appear knowledgeable to patients at all times (UNCHANGED) - Suggestions for alternative wording of statements

| Showing 1 response | |
|---|---|
| It is important to be honest about uncertainties in the treatment options that can be provided when communicating with patients | 817407-817398-87670775 |

1.14 ORIGINAL: Being confronted with contradictory evidence in clinical practice makes me feel uncomfortable (UNCHANGED)

1.14.a ORIGINAL: Being confronted with contradictory evidence in clinical practice makes me feel uncomfortable (UNCHANGED) - Level of agreement with each statements

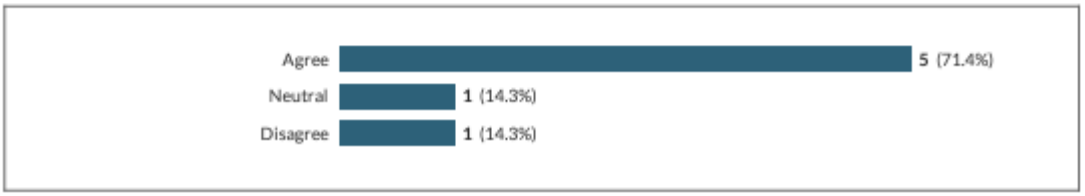



1.14.b ORIGINAL: Being confronted with contradictory evidence in clinical practice makes me feel uncomfortable (UNCHANGED) - Suggestions for alternative wording of statements

| Showing 1 response | |
|---|---|
| Being confronted with contradictory evidence in clinical practice provides the opportunity to make joint decisions about the direction of care with the patient | 817407-817398-87670775 |

1.15 ORIGINAL: I like the mystery that there are some things in medicine we'll never know; NEW: I like the mystery that there are some things in clinical practice we'll never know

1.15.a ORIGINAL: I like the mystery that there are some things in medicine we'll never know; NEW: I like the mystery that there are some things in clinical practice we'll never know - Level of agreement with each statements

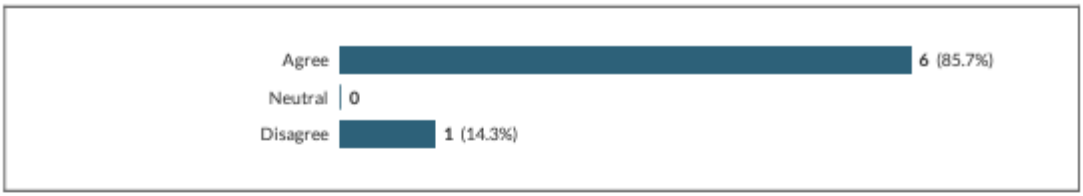


1.15.b ORIGINAL: I like the mystery that there are some things in medicine we'll never know; NEW: I like the mystery that there are some things in clinical practice we'll never know - Suggestions for alternative wording of statements

| Showing 1 response | |
|---|---|
| Uncertainties in clinical practice provide the opoortunties to work to understand them | 817407-817398-87670775 |

1.16 ORIGINAL: Variation between individual patients is a frustrating aspect of medicine; NEW: Variation between individual patients is a frustrating aspect of clinical practice

1.16.a ORIGINAL: Variation between individual patients is a frustrating aspect of medicine; NEW: Variation between individual patients is a frustrating aspect of clinical practice - Level of agreement with each statements

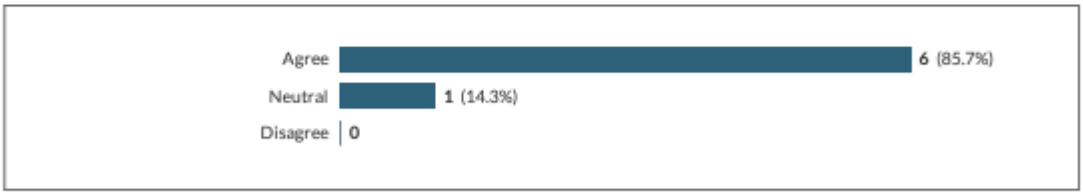



1.16.b ORIGINAL: Variation between individual patients is a frustrating aspect of medicine; NEW: Variation between individual patients is a frustrating aspect of clinical practice - Suggestions for alternative wording of statements

| Showing 1 response | |
|---|---|
| Variation between individual patients requires that the clinician exercises skill and compassion | 817407-817398-87670775 |

1.17 ORIGINAL: I find it frustrating when I can't find the answer to a clinical question (UNCHANGED)

1.17.a ORIGINAL: I find it frustrating when I can't find the answer to a clinical question (UNCHANGED) - Level of agreement with each statements

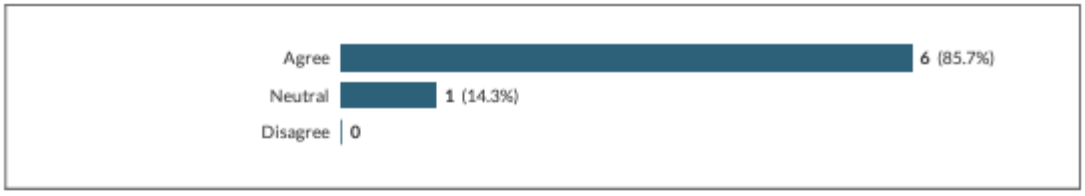



1.17.b ORIGINAL: I find it frustrating when I can't find the answer to a clinical question (UNCHANGED) - Suggestions for alternative wording of statements

| Showing 1 response | |
|---|---|
| I understand that there may not be certain answers to all clinical questions | 817407-817398-87670775 |

1.18 ORIGINAL: I am apprehensive when faced with a new clinical situation or problem (UNCHANGED)

1.18.a ORIGINAL: I am apprehensive when faced with a new clinical situation or problem (UNCHANGED) - Level of agreement with each statements

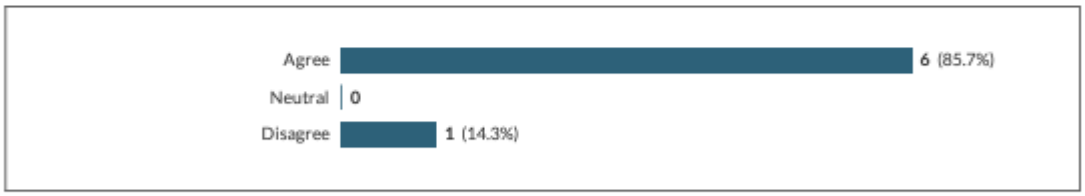



1.18.b ORIGINAL: I am apprehensive when faced with a new clinical situation or problem (UNCHANGED) - Suggestions for alternative wording of statements

| Showing 1 response | |
|---|---|
| I welcome the chance to learn new things and new skills when faced with a new clinical situation or problem | 817407-817398-87670775 |

1.19 ORIGINAL: I feel uncomfortable knowing that many of our most important clinical decisions are based upon insufficient information (UNCHANGED)

1.19.a ORIGINAL: I feel uncomfortable knowing that many of our most important clinical decisions are based upon insufficient information (UNCHANGED) - Level of agreement with each statements

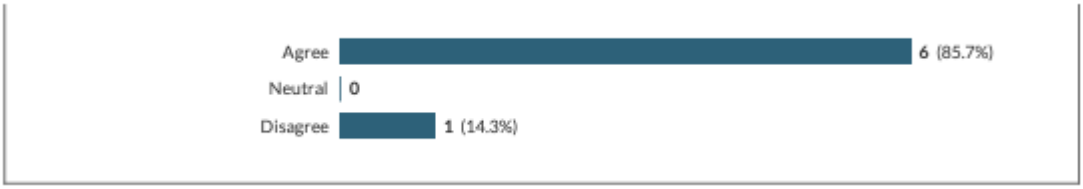



1.19.b ORIGINAL: I feel uncomfortable knowing that many of our most important clinical decisions are based upon insufficient information (UNCHANGED) - Suggestions for alternative wording of statements

| Showing 1 response | |
|---|---|
| I recognise that manu of our most important clinical decisions are based on insufficient information | 817407-817398-87670775 |

1.20 ORIGINAL: No matter how complicated the situation, a good doctor will be able to arrive at a yes or no answer; NEW: No matter how complicated the situation, a good clinician will be able to arrive at a yes or no answer

1.20.a ORIGINAL: No matter how complicated the situation, a good doctor will be able to arrive at a yes or no answer; NEW: No matter how complicated the situation, a good clinician will be able to arrive at a yes or no answer - Level of agreement with each statements



1.20.b ORIGINAL: No matter how complicated the situation, a good doctor will be able to arrive at a yes or no answer; NEW: No matter how complicated the situation, a good clinician will be able to arrive at a yes or no answer - Suggestions for alternative wording of statements

| Showing 1 response | |
|---|---|
| No matter how complicated the situation, the good clinician will be able to work with the patient to weigh the most appropriate course of action | 817407-817398-87670775 |

1.21 ORIGINAL: I feel uncomfortable when textbooks or experts are factually incorrect (UNCHANGED)

1.21.a ORIGINAL: I feel uncomfortable when textbooks or experts are factually incorrect (UNCHANGED) - Level of agreement with each statements


1.21.b ORIGINAL: I feel uncomfortable when textbooks or experts are factually incorrect (UNCHANGED) - Suggestions for alternative wording of statements

*No responses*

1.22 ORIGINAL: There is really no such thing as a clinical problem that can't be solved (UNCHANGED)

1.22.a ORIGINAL: There is really no such thing as a clinical problem that can't be solved (UNCHANGED) - Level of agreement with each statements


1.22.b ORIGINAL: There is really no such thing as a clinical problem that can't be solved (UNCHANGED) - Suggestions for alternative wording of statements

*No responses*

1.23 ORIGINAL: I like the challenge of being thrown in the deep end with different medical situations; NEW: I like the challenge of being thrown in the deep end with different clinical situations

1.23.a ORIGINAL: I like the challenge of being thrown in the deep end with different medical situations; NEW: I like the challenge of being thrown in the deep end with different clinical situations - Level of agreement with each statements

1.23.b ORIGINAL: I like the challenge of being thrown in the deep end with different medical situations; NEW: I like the challenge of being thrown in the deep end with different clinical situations - Suggestions for alternative wording of statements

| Showing 1 response | |
|---|---|
| I like the challenge of working to become confident in managing different clinical situations | 817407-817398-87670775 |

1.24 ORIGINAL: It is more interesting to tackle a complicated clinical problem that to solve a simple one (UNCHANGED)

1.24.a ORIGINAL: It is more interesting to tackle a complicated clinical problem that to solve a simple one (UNCHANGED) - Level of agreement with each statements


1.24.b ORIGINAL: It is more interesting to tackle a complicated clinical problem that to solve a simple one (UNCHANGED) - Suggestions for alternative wording of statements

| Showing 1 response | |
|---|---|
| I like the challenge of working carefully to successfully manage complicated clinical problems | 817407-817398-87670775 |

1.25 ORIGINAL: I enjoy the process of working with a complex clinical problem and making it more manageable (UNCHANGED)

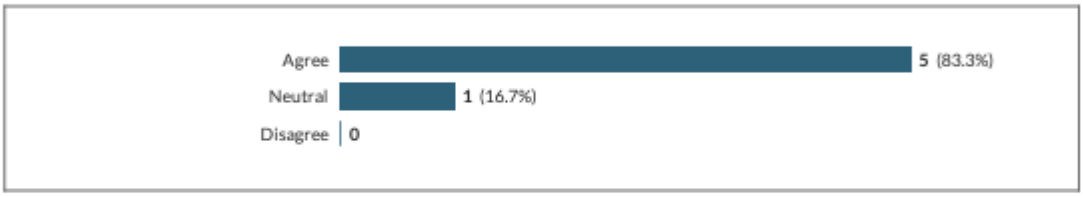
1.25.a ORIGINAL: I enjoy the process of working with a complex clinical problem and making it more manageable (UNCHANGED) - Level of agreement with each statements


1.25.b ORIGINAL: I enjoy the process of working with a complex clinical problem and making it more manageable (UNCHANGED) - Suggestions for alternative wording of statements

*No responses*

1.26 ORIGINAL: A good job is one where what is to be done and how it is to be done are always clear (UNCHANGED)

1.26.a ORIGINAL: A good job is one where what is to be done and how it is to be done are always clear (UNCHANGED) - Level of agreement with each statements

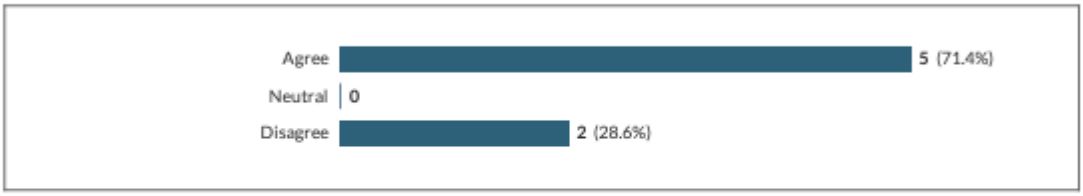



1.26.b ORIGINAL: A good job is one where what is to be done and how it is to be done are always clear (UNCHANGED) - Suggestions for alternative wording of statements

*No responses*

1.27 ORIGINAL: To me, medicine is black and white; NEW: To me, clinical practice is black and white

1.27.a ORIGINAL: To me, medicine is black and white; NEW: To me, clinical practice is black and white - Level of agreement with each statements

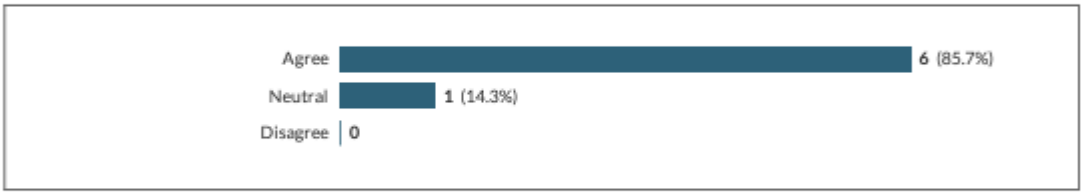



1.27.b ORIGINAL: To me, medicine is black and white; NEW: To me, clinical practice is black and white - Suggestions for alternative wording of statements

*No responses*

1.28 ORIGINAL: The beauty of medicine is that it's always evolving and changing; NEW: The beauty of clinical practice is that it's always evolving and changing

1.28.a ORIGINAL: The beauty of medicine is that it's always evolving and changing; NEW: The beauty of clinical practice is that it's always evolving and changing - Level of agreement with each statements




1.28.b ORIGINAL: The beauty of medicine is that it's always evolving and changing; NEW: The beauty of clinical practice is that it's always evolving and changing - Suggestions for alternative wording of statements

*No responses*

1.29 ORIGINAL: I would be comfortable to acknowledge the limits of my medical knowledge to patients; NEW: I would be comfortable to acknowledge the limits of my clinical knowledge to patients

1.29.a ORIGINAL: I would be comfortable to acknowledge the limits of my medical knowledge to patients; NEW: I would be comfortable to acknowledge the limits of my clinical knowledge to patients - Level of agreement with each statements


1.29.b ORIGINAL: I would be comfortable to acknowledge the limits of my medical knowledge to patients; NEW: I would be comfortable to acknowledge the limits of my clinical knowledge to patients - Suggestions for alternative wording of statements

*No responses*

2 Please use the space below to provide any additional comments or feedback you would like to share with the research team

| Showing all 4 responses | |
|---|---|
| Tool looks easy to use | 817407-817398-87288798 |
| Overall I think these are clear and consistent changes to replace "medicine" and reflect the different clinical roles. Good luck! | 817407-817398-87499901 |
| Many of the statements are at odds with how we believe patient centred care should be delivered - realistic medicine | 817407-817398-87670775 |
| Note: Above comments relate to agreement/disagreement with the wording only, not to the statement per se..... | 817407-817398-87697852 |

## Appendix 4: SBE Course Detail and Simulation Scenario's Paperwork

**Overview**

This exciting new course has been designed to give GPCPs the opportunities to implement their clinical and consultation skills with simulated patients in a safe environment. Through structured debriefs, participants will have opportunity to explore their current practice and identify further development needs. Simulation-Based Education (SBE) is the "imitation or representation of one act or system by another" and "serves as a bridge between theoretical learning and real-life experience". There are many advantages to SBE such as improving clinician confidence while removing risk to patients.

**Who would benefit from attending this course?**

GPCPs who spend at least some of their time in a patient-facing role and who are working within NHS Scotland.

GPCPs who would like to challenge themselves with complex decision-making and working within clinical 'grey areas'

**Prior learning/skills requirements**

Practicing as a Pharmacist Independent Prescriber in a patient-facing role in general practice. [Essential]

Completion of the NES Core Clinical Assessment Skills Course and/or be comfortable using these skills in practice. [Essential]

Completion of the NES Consultation Skills Course and/or be undertaking consultations in practice. [Essential]

**GPCP SBE Course Aim:**

To provide GPCPs with opportunity to develop their clinical assessment, management, prescribing and consultation skills through observed interactions with simulated patients over a range of common clinical encounters within General Practice.

**GPCP SBE Course Learning Objectives:**

Develop confidence and demonstrate competence in clinical assessment, management, prescribing and consultation skills over a range of common clinical encounters within General Practice, including acute and long-term conditions, polypharmacy and multimorbidity, interpreting clinical findings and investigation results."

Simulation scenarios comprised of the following:

**Scenario 1:**

A review of a patient with well controlled asthma with the following learning outcomes:

- Demonstrate a person-centred consultation
- Complete a thorough asthma history-taking
- Support deprescribing in a patient with well-controlled asthma

**Scenario 2:**

A medication review with a frail, elderly patient including a discussion around ceiling of care with the following learning outcomes:

- Evaluate patient's Ideas, Concerns and Expectations (ICE)
- Integrate patient's ICE into ceiling of care arrangements
- Appraise medications in frail, elderly patient

**Scenario 3:**

A post discharge medication review with a patient after a first event Transient Ischaemic Attack (TIA) with the following learning outcomes:

- Analyse patient's symptoms
- Evaluate patient's ICEs during a difficult conversation
- Develop treatment plan with anti-hypertensives and statin

**Scenario 4:**

A review of a patient with poorly controlled Type 2 Diabetes (T2DM) with the following learning outcomes:

- Evaluate patient's ICEs
- Assess symptoms
- Create a plan for treating uncontrolled, symptomatic diabetes

# Simulation Scenario Detail

## Scenario 1: Asthma Review

| | |
|---|---|
| Props | Placebo inhalers (if available) |
| Equipment | Scenario synopsis & briefings<br>Relevant guidelines & leave laptop with internet<br>GP10 pad<br>Bag of instruments<br>Information for observers<br>Phone 'out of earshot of patient' for participant to call ES<br>Laptop connected to intra/internet |
| Setting | GP surgery – desk and 2 chairs opposite – patient will be sat in 'waiting room' outside and participant will call them in when ready |
| Learning Outcomes | Demonstrate a person-centred consultation<br>Complete a thorough asthma history-taking<br>Support deprescribing in a patient with well-controlled asthma |

### Information for Pharmacist Participants

| **Scenario synopsis for pharmacist participants** |
|---|
| Today you are seeing Sam Saunderson (48yrs) for a routine asthma review to:<br>• Discuss the patient's current asthma management<br>• Make an appropriate plan<br>Sam is speaking with you today following their last asthma review 1 year ago. They have followed instructions on the invite letter and have completed some monitoring at a distance including peak flow and an asthma control test.<br>**Last measurements 13m ago**<br>• Last Peak flow – 93% predicted peak flow<br>• Last weight – 85kg<br>• Height – 168cm<br><br>**Clinical Supervision:** During this interaction you will have the opportunity (if you require it) to "use a telephone out of the earshot of patient" to speak with your Clinical Supervisor if you are unsure or need some guidance. Your Clinical Supervisor will be played by the Facilitator. |

| **Past Medial History** | **Onset** | | **Family History** |
|---|---|---|---|
| Asthma | 41y | | Asthma (mother, father) |
| Hay fever | 45y | | |
| Eczema | 46y | | |
| Chest infection | 24m | | |

| **Medication** | **Dose** | **Time since last issue (28-day Rxs)** |
|---|---|---|
| Flutiform 250/10mcg pMDI | Two puffs twice a day | ~1month |
| Ventolin Evohaler 100mcg pMDI | Two puffs when required | >7months |
| Cetirizine 10mg tablets | One daily | >6months |
| Mometasone furoate nasal spray | Two sprays both nostrils twice a day | >2months |

| | | |
|---|---|---|
| Clarithromycin 500mg tabs | One twice a day for 5 days | >20months |
| Prednisolone 5mg tabs | Eight a day for 5 days | >20months |

| **Allergies and ADRs (adverse drug reactions)** | **Details** | **Date** |
|---|---|---|
| Penicillin | Rash, itch | 45years ago |

**Information for Simulated Patients**

| **Scenario synopsis for simulated patients** |
|---|
| • You are Sam (48yrs), a receptionist in a busy local business. You have had asthma since childhood (7yrs old until current age 48yrs) and have had variable control over the years. Since just before your last review your asthma control has been much better than it has been in the previous 5 years.<br>• As a child you remember your asthma was hard to control but grew out of it a bit through your late teens and early 20s.<br>• Over the last 10 years or so you have had worse asthma and have had chest infections at least once a year and suffered from a lot of asthma symptoms (cough, wheeze, and some shortness of breath), including needing to use your blue inhaler most days.<br>• **Within the last 20 months you have seen a significant improvement.** You are not sure why you have improved so much but think this change could be due to a change in your work around about the same time, since moving from a local building firm working in their stores and in dusty environments – to working in an office<br>• You are not sure why you have been asked to come today for a review as "I feel fine, don't want to waste your time."<br><br>The pharmacist is going to carry out an asthma review with you including some questions about your asthma control. They may also ask you for your recent **Peak flow reading** and may ask you your **Asthma control test score. You did these yesterday**<br>• **Peak Flow measurement today: 120-130% of predicted**<br>• **Asthma Control Test: 24/25** |
| **Opening line:** |
| "Thanks for the appointment, I'm hopefully not going to waste your time?" |
| **Ideas, Concerns & Expectations:** |
| **Ideas** – you are happy with your asthma control and happy to continue as is<br>**Concerns** – you have no concerns as have been feeling great, but are worried about any changes to treatments since you feel as good as you do<br>**Expectations** – you expect your treatments to carry on as is |
| **Behaviour:** |
| START: Unsure of reason for appointment.<br>MIDDLE: Hesitant to change any therapies, you need some convincing that it is safe and will not cause you to lose your asthma control – why should you change, what is the risk?<br>END: If explained well, feeling reassured and agreeable with the plan and instructions. |
| **Any specific responses if asked:** |
| • ASTHMA CONTROL TEST: 24/25 (used your blue inhaler less than once per week)<br>• BLUE INHALER USE: less than once a week |

| |
|---|
| • EXERCISE: you do aerobics twice a week, your asthma does not bother you with exercise, you get short of breath but that is because you are working hard<br>• SMOKING: Lifelong non-smoker<br>• ASTHMA TRIGGERS: Animals – wheezing and chest tightness // Chilly air – chest tightness // Cold symptoms – cough, chest tightness, wheeze<br>• COMPLIANCE WITH INHALERS: Take them every day as they are prescribed, 2 puffs of the purple one twice a day<br>• SPACER DEVICE: you do not use a spacer device<br>• TECHNIQUE: Everyone has said your inhaler technique is good – "I've been doing it long enough."<br>• PEAK FLOW: **120-130% of predicted** |
| **Any specific clothing or props?** |
| Placebo inhaler with patient and with pharmacist – for technique check |
| **Moulage:** |
| None |

**Scenario 2: Frail Elderly Medication Review and Discussion around Ceiling of Care**

| | |
|---|---|
| Props | Walking stick<br>Blanket<br>Cosy chair |
| Equipment | Scenario synopsis & briefings<br>Additional sheet re: ceiling of care<br>GP10 pad<br>Bag of instruments<br>Information for observers<br>Phone 'out of earshot of patient' for participant to call ES |
| Setting | Residential care home. Patient will be seated in cosy chair with blanket and Pharmacist will go in to speak to them when ready. |
| Learning Outcomes | Evaluate patient's ICE<br>Integrate patient's ICE into ceiling of care arrangements<br>Appraise medications in frail, elderly patient |

**Information for Pharmacist Participants**

| **Scenario synopsis for pharmacist participants** |
|---|
| You are a GPCP who has been asked by your practice to visit a local residential care home to:<br>• undertake an annual care home medication review<br>• discuss the ceiling of care arrangements for inclusion in the patient's Anticipatory Care Plan (ACP), should she become unwell, in terms of where she would like to be treated.<br>Mabel Anthony is 93 years old and is a new patient to the practice having moved into the residential care home six months previously. Mabel already has a DNACPR (Do Not Attempt Cardiopulmonary Resuscitation) form completed and **is known to have capacity** to make decisions about her own clinical care and treatment.<br><br>She has had pre-review monitoring checks completed and these are as follows:<br><br>BP 124/70 mmHg (sitting - today) |

Pulse 62 beats per minute, regular (today)
Weight 50.3kg (this month)
Height 160cm (this month)
U&Es - below (1 month ago)
TFTs (Thyroid Function Tests) – normal (15 months ago)

| | | | | |
|---|---|---|---|---|
| Sodium | 142 | 133 - 146 | mmol/L | |
| Potassium | 4 | 3.5 - 5.3 | mmol/L | |
| Chloride | 104 | 95 - 108 | mmol/L | |
| Urea | 4.9 | 2.5 - 7.8 | mmol/L | |
| Creatinine | 74 | 44 - 71 | umol/L | **H** |
| eGFR | 62 | | ml/min/1.73m$^2$ | |

Calculated CrCl = 33ml/min

**Clinical Supervision:** During this interaction you will have the opportunity (if you require it) to "use a telephone out of the earshot of patient" to speak with your Clinical Supervisor if you are unsure or need some guidance. Your Clinical Supervisor will be played by the Simulation Facilitator.

| **Past Medical History** |
|---|
| Hypertension (24 years)<br>Urinary frequency (16 years)<br>Hypothyroidism – (20 years)<br>Recent fall – no fracture, soft tissue injury only (6 weeks ago) |
| **Medication History** |
| Adizem XL 240mg daily<br>Tolterodine 2mg twice daily<br>Levothyroxine 25micrograms daily<br>Paracetamol 1g up to four times daily<br>Codeine 15mg one or two tablets up to four times daily as required<br>Laxido 1-3 sachets daily to maintain soft regular bowel movement<br>NKDA |

**Additional Verbal Handover & Aide Memoire: Ceiling of Care Discussions**

Mabel is a 93yo patient who has capacity to make her own decisions regarding her medical care and treatment. She has already asked for a DNACPR form to be completed as she feels she is "too old for all that nonsense!" She has a fairly stoic outlook on life and although she has enjoyed her life, she is ready to pass on when her time comes.

You are required to talk to Mabel about her Ceiling of Care. Having Ceiling of Care discussions is a fundamental part of delivering Realistic Medicine. It is about having an honest discussion with a patient, when they are well, to find out their wishes regarding treatment, if they become unwell in the future. It is actually very similar to a polypharmacy review, only this is for prospective treatment, rather than current treatment. Good ceiling of care discussions acknowledge the fact that admission to hospital and administration of antibiotics and other treatments, including fluids, are not always in a patient's best interests: indeed, in some cases this can inappropriately result in prolongation of a poor quality of life.

Generally, there are 4 categories of standard ceiling of care instructions – these are as follows:

| **Type of Care to be Delivered** | **Standardised Ceiling of Care Instructions** | **DNACPR** |
|---|---|---|
| End-Stage Palliative | Not for admission to hospital.<br>Keep within care home setting – make comfortable.<br>Note: treatment may be required for acute injury, as necessary, e.g., fracture, laceration etc.<br>Not for active treatment, including antibiotics or fluids. | DNACPR essential. |
| Palliative | Not for admission to hospital.<br>Keep within care home setting – make comfortable.<br>Note: treatment may be required for acute injury, as necessary, e.g., fracture, laceration etc.<br>Consider antibiotics/fluids, if appropriate. | DNACPR essential. |
| Admission: reversible cause only | Admit for ward-level care for short-term reversible illness.<br>HDU/ITU level care not appropriate.<br>Antibiotics/fluids appropriate. | Consider if DNACPR appropriate or desirable to pt. |
| Admission: full care | Admit to hospital when necessary for full care.<br>Antibiotics/fluids appropriate. | Consider if DNACPR appropriate or desirable to pt. |

**Information for Simulated Patients**

| **Scenario synopsis for simulated patients** |
|---|
| You are a resident in a residential home and moved in 6 months ago as you were not able to live independently at home anymore. You were no longer able to do the housework, prepare meals and were becoming a bit forgetful. You have settled well into the residential home and enjoy having the company of the other residents.<br><br>You have had high blood pressure for a long time (>20 years) and before you moved into the care home you looked after your own medicines at home although you did forget to take them sometimes. Now the care home staff look after your medicines for you, and you like this because you know are getting them at the right time.<br><br>You cannot remember the names of your tablets except for your thyroxine but you know that you usually take 3 tablets in the morning and 1 at night. You also have a drink each morning and sometimes at night to keep you from getting constipated.<br><br>You had a fall about 6 weeks ago; you got up from your chair, felt dizzy and staggered, falling against a table. You hurt your side, but nothing was broken, and you now feel back to normal. You were taking some pain killers after your fall, but you do not think you are still taking them. You do not know what type of pain killers they were, but you did feel more sleepy than normal when you were taking them.<br>You have not met the pharmacist before and are wondering why they have come to visit you. |

| **Opening line:** |
| --- |
| "I am not really sure why you have come to see me. Is it about my medicines as I do not take anything to do with them now?" |
| **Ideas, Concerns & Expectations:** |
| **Ideas** – you have never liked "taking tablets" and would like to stop them. You are happy to consider alternative medications provided these are discussed with you.<br>**Concerns** –You do not want to be on medicines that could have side effects<br>**Expectations** – you have realistic expectations of your life expectancy - "I'm 93, I'm not going to live forever!" |
| **Behaviour:** |
| Pleasant, cheerful, and chatty. |
| **Any specific responses if asked:** |
| The pharmacist should ask you questions about side effects that you may get from your medicines.<br>They may prompt you specifically about the following:<br>**Dizziness on standing –** you still can feel a bit lightheaded after you stand and can feel off-balance when you are walking especially if you forget your stick.<br>**Urinary Frequency/ up at night to urinate** - you do not get up at night any more to go to the loo (this used to happen a lot and significantly interrupted your sleep). You do not have any issues during the day; you wear incontinence pads.<br>**Constipation** – you sometimes get this, and then you take a drink each morning and sometimes at night to help. The nurses keep you right<br>**Pain control** – you rarely take any pain killers except recently after your fall.<br>**Ceiling of care- should you need treatment if you become unwell –** "I don't want to have to go to hospital at all. My husband died in hospital and I don't want to". Can say "Does this mean I'm going to die soon?" at the start of the conversation.<br>They may also ask about:<br>**Power of Attorney (POA)** – you have a nephew who is your power of attorney. This was put in place after your husband died. |
| **Any specific clothing or props?** |
| Walks with stick |
| **Moulage:** |
| None |

**Clinical Information – Facilitators & Simulated Patients**

| **Name** |
| --- |
| Mabel Anthony |
| **Age or DoB** |
| 93 |
| **Gender** |
| Female |
| **Setting** |
| Care Home |
| **Reason for Interaction** |
| Annual care home review |
| **Presenting Complaint** |
| Not appropriate – pharmacist has visited care home to conduct the routine annual review |
| **History of Presenting Complaint** |
| Not appropriate – pharmacist has visited care home to conduct the routine annual review |

| **Past Medical History** |
| --- |
| Hypertension (24 years)<br>Urinary frequency (16 years)<br>Hypothyroidism – (20 years)<br>Recent fall – no fracture, soft tissue injury only (6 weeks ago) |
| **Medication History** |
| Adizem XL 240mg daily<br>Tolterodine 2mg twice daily<br>Levothyroxine 25micrograms daily<br>Paracetamol 1g up to four times daily<br>Codeine 15mg one or two tablets up to four times daily as required<br>Laxido 1-3 sachets daily to maintain soft regular bowel movement<br><br>NKDA |
| **Family History** |
| No children.<br>Both parents died of natural causes in their seventies. |
| **Social History** |
| Is a residential patient in care home. Widowed 10 years ago. No children.<br>Non-smoker. Tee-total (previous social drinker prior to husband's death) |

**Facilitator's Guide**

| **Expectation of pharmacist assessment** |
| --- |
| Exploration of efficacy/side effects of patient's current medication:<br>Adizem – dizziness/L&S BPs<br>Tolterodine – urinary symptoms<br><br>Cockcroft Gault GFR (Glomerular Filtration Rate): 33ml/min<br><br>Ascertaining current use of analgesia/laxatives<br><br>Understanding of POA/welfare POA, whether or not patient has capacity and who it is appropriate to have medication/ACPA discussions with. |
| **Expectation of pharmacist investigation plan** |
| Repeat TFTs as >1 year since last results. |
| **Expectation of pharmacist management plan** |
| Reduce dose of /stop Adizem XL and monitor BP<br>Stop tolterodine, possibly change to mirabegron<br>Continue levothyroxine, get TFTs checked |
| **Expectation of pharmacist consultation & interaction with patient** |
| Explore ICE/build rapport with patient.<br>Agree course of action with tolterodine with patient. |

## Scenario 3: Post-Discharge Medication Review for First TIA

| | |
|---|---|
| Props | None |
| Equipment | Scenario synopsis & briefings<br>Relevant guidelines or leave laptop with internet?<br>GP10 pad<br>Bag of instruments<br>Information for observers<br>Phone 'out of earshot of patient' for participant to call ES<br>Laptop connected to intra/internet |
| Setting | GP surgery – desk and 2 chairs opposite – patient will be sat in 'waiting room' outside and participant will call them in when ready |
| Learning Outcomes | Analyse patient's symptoms<br>Evaluate patient's ICEs during a difficult conversation<br>Develop treatment plan with anti-hypertensives and statin |

### Information for Pharmacist Participants

**Scenario synopsis for pharmacist participants**

Having undertaken the post-discharge medicines reconciliation for **George MacPherson (62 years old**) you have arranged for this patient to come into the surgery. The patient is two months post TIA.
Your task is to:

- review this patient's medication
- make any changes you consider necessary

Their baseline U&Es & LFTs prior to starting treatment post-TIA were all within normal range. They have had monitoring completed before coming to see you and their results are as follows:
BP 148/90 mmHg (sitting - today)
Pulse 74 beats per minute regular (today)
Weight 72kg (this month)

**Clinical Supervision:** During this interaction you will have the opportunity (if you require it) to "use a telephone out of the earshot of patient" to speak with your Clinical Supervisor if you are unsure or need some guidance. Your Clinical Supervisor will be played by the Facilitator.

**Past Medical History**

Hypertension (5 years)
Recent admission to hospital with TIA (2 months ago)

**Medication History**

Amlodipine 5mg daily (started 5 years ago)
Perindopril 2mg daily (started 6 weeks ago)
Indapamide 2.5mg daily (started 6 weeks ago)
Clopidogrel 75mg daily (started 8 weeks ago)
Atorvastatin 80mg at night (started 8 weeks ago)

No drug allergies

**Information for Simulated Patients**

| **Scenario synopsis for simulated patients** |
|---|
| You are a recently retired offshore engineer. You have had high blood pressure for 5 years and thought that this was relatively well controlled. It certainly was not raised at your company medicals. However, you did miss blood pressure appointments on occasion because of your shift pattern. This also affected your ability to collect and take your blood pressure medicine (amlodipine) and this meant that you sometimes did not take it.<br><br>Two months ago, you were admitted to hospital after the left side of your mouth became droopy and you lost feeling in your left arm and the doctors told you that you had a "mini stroke."<br><br>You have been taking all your medicines since you were discharged from hospital and have not missed any doses. You have noticed that over the last three weeks your legs have been feeling "heavy" and your thigh muscles are feeling very stiff. After reading the patient information leaflet you wonder if this is due to your atorvastatin or whether it is something else wrong with your legs.<br><br>You have not mentioned this to anyone before now as you knew you were coming for this appointment. |
| **Opening line:** |
| "I hope you are going to sort out my medicines!" |
| **Ideas, Concerns & Expectations:** |
| **Ideas** – you have never liked "taking tablets" and are not entirely happy that you went into hospital taking one medicine and were discharged on five. However, provided you have your medicines explained to you, including the risks and benefits, you will be happy to continue taking them.<br>**Concerns** –you have read a lot of negative press about statins; are concerned that the current side effects will be irreversible. You are also worried that there is something else wrong with your legs.<br>**Expectations** – You expect to get your medicines "sorted," i.e., be on the most appropriate regime for you and get the muscle aches and pains treated. |
| **Behaviour:** |
| Standoffish & irritable. You are upset that you have had a reaction to your statin. Provided a rapport is built and pharmacist listens to your concerns you calm down during your appointment.<br>You will accept suggestions/plan of pharmacist if there has been joint decision making. |
| **Any specific responses if asked:** |
| The pharmacist should ask you questions to elicit information about how you take your medicines and potential side effects that you may get from them.<br>They may prompt you specifically about the following:<br>**When you take your medicines** – you take them all in the morning; this helps you to remember to take them<br>**Muscle aches & pains –** this started about three weeks ago and you have been treating this with paracetamol you get from the chemist.<br>**Cough** - you do not have a cough<br>**Heartburn/indigestion** – you have not had any<br>**Urinary frequency** – you notice you are going to the loo after taking your tablets, but this usually wears off about lunchtime. If necessary, you adjust your day's activities accordingly. |

| |
|---|
| **Swollen ankles** – you do not have swollen ankles |
| **Any specific clothing or props?** |
| None |
| **Moulage:** |
| None |

**Clinical Information – Facilitators & Simulated Patients**

| |
|---|
| **Name** |
| George/Georgia MacPherson |
| **Age or DoB** |
| 62 |
| **Gender** |
| Neutral |
| **Setting** |
| GP surgery |
| **Reason for Interaction** |
| Review of medicines post-discharge from hospital |
| **Presenting Complaint** |
| Review post hospital discharge<br>Have muscle aches & pains particularly in your thighs and calves – legs feel “heavy” |
| **History of Presenting Complaint** |
| Muscle aches & pains – started about three weeks ago. Thought it might have been due to gardening, but it has not gone away. You have been taking paracetamol which takes the edge off but does not completely help. |
| **Past Medical History** |
| Hypertension (high blood pressure) (5 years)<br>Recent admission to hospital with TIA (2 months ago) |
| **Medication History** |
| Amlodipine 5mg daily (5 years ago)<br>Perindopril 2mg daily (started 6 weeks ago)<br>Indapamide 2.5mg daily (started 6 weeks ago)<br>Clopidogrel 75mg daily (started 8 weeks ago)<br>Atorvastatin 80mg at night (started 8 weeks ago)<br><br>No drug allergies. |
| **Family History** |
| No children.<br>Father died of stroke aged 74<br>Mother died ovarian cancer aged 55 |
| **Social History** |
| Not married, lives alone.<br>Non-smoker. Has a large glass of wine every night; has been cutting down after the TIA (mini stroke) |

**Facilitator's Guide**

| **Expectation of pharmacist assessment** |
|---|
| Exploration of efficacy/side effects of patient's current medication<br>Anti-hypertensives– can take BP |
| **Expectation of pharmacist investigation plan** |
| Take history to rule out rhabdomyolysis<br>Arrange for a CK level & LFTs to be taken |
| **Expectation of pharmacist management plan** |
| In agreement with the patient:<br>Reduce dose of atorvastatin or alternative statin (avoid simvastatin as on amlodipine, would need to be rosuvastatin)<br>Increase dose of perindopril - monitor BP, U&Es in 2 weeks<br>Lipid profile (TC, HDL & TG) to be taken with next BP & U&Es<br>Continue other medicines as prescribed |
| **Expectation of pharmacist consultation & interaction with patient** |
| Explore ICE/build rapport with patient, listen to and address concerns, avoid escalation of irritation.<br>Agree course of action with statin<br>Agree course of action with anti-hypertensives |

**Scenario 4: Type 2 Diabetes Review**

| Props | None |
|---|---|
| Equipment | Scenario synopsis & briefings<br>Relevant guidelines or leave laptop with internet?<br>GP10 pad<br>Bag of instruments<br>Information for observers<br>Phone 'out of earshot of patient' for participant to call ES<br>Laptop connected to intra/internet |
| Setting | GP surgery – desk and 2 chairs opposite – patient will be sat in 'waiting room' outside and participant will call them in when ready |
| Learning Outcomes | Evaluate patient's ICEs<br>Assess symptoms<br>Create a plan for treating uncontrolled, symptomatic diabetes |

**Information for Pharmacist Participants**

| **Scenario synopsis for pharmacist participants** |
|---|
| You are a pharmacist covering the diabetes clinic within the general practice. **Sam Higgins (42 years old)** has been called back into the practice for their annual routine review. Your task is to:<br>• Review this patient's diabetes and its management.<br><br>The patient has had all their monitoring checks completed with the HCA last week and these are as follows: |

HbA1c 88mmol/mol (target <53)
ACR <2.5 (normal)
BP 128/78 mmHg
Foot screening: R foot - Low risk, L foot - Low risk
BMI 33
eGFR >90ml/min/1.73m$^2$
U&Es – normal
FBC – normal
LFTs – normal

**Past Medical History**
Type 2 diabetes (8 years)
Hypertension (10 years)
Hyperlipidaemia (6 years)
Obesity – (BMI 33)
Osteoarthritis – both knees (4 years)

**Medication History**
Metformin 1g twice daily
Atorvastatin 20mg daily
Lisinopril 20mg daily
Paracetamol 1g up to four times daily
Codeine 30mg one or two tablets up to four times daily
NKDA

**Clinical Supervision:** During this interaction you will have the opportunity (if you require it) to "use a telephone out of the earshot of patient" to speak with your Clinical Supervisor if you are unsure or need some guidance. Your Clinical Supervisor will be played by the Facilitator.

**Information for Simulated Patients**

**Scenario synopsis for simulated patients**

You have type 2 diabetes and have been called into your regular review appointment.

You think everything should be ok with your diabetes. You always take your tablets, you (think) you watch what you eat and cannot really do any more exercise than you currently do due to your osteoarthritis.

At first, your primary concern is that you seem to be very tired over the last 6 weeks or so. The pharmacist should identify that this is likely a symptom of your diabetes. They should explore the fatigue symptom with you as well as screen for other symptoms of diabetes.

After this, they should talk you through your recent blood test results – your diabetes blood test is high. It is likely this is causing the fatigue (and other symptoms which you do not initially disclose to the pharmacist). They should ask you about other potential symptoms of uncontrolled diabetes.

They should ask you about your adherence to medicines, your physical activity levels, and your diet.

| |
|---|
| They should discuss options for diabetes management with you. It is likely one of these will be medication. They may even discuss different medication treatment options for you. You would be happy to accept a new medication but would like to know its side effects. |
| **Opening line:** |
| "I'm awfully tired these last few weeks – you've not got a tablet for that, have you?!" |
| **Ideas, Concerns & Expectations:** |
| **Ideas** – you are not sure why, but you seem to be very tired over the last 6 weeks.<br>**Concerns** – you are a bit worried about why you might be so tired.<br>**Expectations** – you think your diabetes is ok. You are not really expecting any changes |
| **Behaviour:** |
| Cooperative |
| **Any specific responses if asked:** |
| **Other diabetes symptoms** – the pharmacist should ask you more about other potential diabetes symptoms. They may prompt you specifically about the following:<br>**Thirst -** you are drinking a lot (mainly fresh orange juice because you think it is healthier – *do not offer the information on what you are drinking unless asked "what are you drinking" or "Can you tell me about your diet"*<br>**Urinary Frequency** - you are going to the toilet to pass urine a lot more regularly.<br>**Nocturia (up at night to urinate)** - you have found that you are up at night 3-4 times a night now too (not usual for you).<br>**Adherence** – you always remember to take your tablets. |
| **Any specific clothing or props?** |
| None |
| **Moulage:** |
| None |

**Clinical Information – Facilitators & Simulated Patients**

| |
|---|
| **Name** |
| Sam Higgins |
| **Age or DoB** |
| 42 years old |
| **Gender** |
| Simulated patient's real gender |
| **Setting** |
| General Practice |
| **Reason for Interaction** |
| Annual review at a practice-based diabetes clinic |
| **Presenting Complaint** |
| Not appropriate for this – patient has been routinely called into clinic |
| **History of Presenting Complaint** |
| Not appropriate for this – patient has been routinely called into clinic |
| **PMHx** |
| Type 2 diabetes (8 years)<br>Hypertension (10 years) |

| |
|---|
| Hyperlipidaemia (6 years)<br>Obesity – (BMI 33)<br>Osteoarthritis – both knees (4 years) |
| **Medication History** |
| Metformin 1g twice daily<br>Atorvastatin 20mg daily<br>Lisinopril 20mg daily<br>Paracetamol 1g up to four times daily<br>Codeine 30mg one or two tablets up to four times daily<br><br>NKDA |
| **Family History** |
| Spouse (15 years married)<br>1 child – female - healthy |
| **Social History** |
| Lives at home with their spouse, works as a bus driver, likes cooking, social drinker, non-smoker. |

**Facilitator's Guide**

| **Expectation of pharmacist assessment** |
|---|
| Exploration of symptoms of poor glycaemic control: fatigue, polydipsia (including what the patient is drinking), polyuria, nocturia, visual disturbance, weight loss.<br><br>Exploration of fatigue.<br><br>Ask about diet, lifestyle (exercise) and adherence. |
| **Expectation of pharmacist investigation plan** |
| TFTs if fatigue is not settling with new treatment plan.<br><br>Depending on what is prescribed – any other monitoring required. |
| **Expectation of pharmacist management plan** |
| Rx for 2nd anti-diabetes medication.<br><br>Avoid fresh orange juice as full of sugars. |
| **Expectation of pharmacist consultation & interaction with patient** |
| Discussion of the pros and cons of different anti-diabetes medications, counselling on potential ADRs.<br><br>Exploration of ICE around fatigue. |

## Appendix 5: Participant Information Sheet

Participant Information Sheet

**Name of Investigator:**
Lyndsay Steel (Principle Investigator)

**RGU supervisor(s)/Co-investigator(s):**
Prof. Scott Cunningham
Dr Tesnime Jebara
Gordon Rushworth

**Collaborators:**
Scott McColgan-Smith
Dr Julie Mardon
Dr Vicky Tallentire
Laura McAuley

**Title of Study:** An evaluation of a simulation-based education course designed for general practice clinical pharmacists.

**INFORMATION SHEET**

You are being invited to take part in a research study. Before you decide it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish. Ask us if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part. Thank you for reading this information sheet.

**What is the purpose of the study?**
This SBE course is a training method being trialed for GPCP's and therefore is part of a research study to review the benefit. The title of the research study is: An evaluation of a simulation-based education course designed for general practice clinical pharmacists.

**Why am I being given this form?**
You have expressed interest in participating in the simulation-based education (SBE) course for General Practice Clinical Pharmacists (GPCP). This proforma is an invitation for you to consent to completing four questionnaires and being interviewed as part of this course evaluation. The evaluation will consider if/how you have developed as a result of the learning you experienced during this training.

**Do I have to take part?**

Completion of two pre and two post course questionnaires, attendance at the half day SBE course and participation in the post course focus group are included in this course. Taking part, including attendance on the half day training course, is voluntary and if you would prefer not to take part you do not have to give a reason. If you take part but later change your mind, you can withdraw from participation at any time without explanation and without disadvantage to yourself. To withdraw you should email the PI above.

**What will I be asked to do if I choose to take part?**

You are being asked to consent to completing the following:

- Pre-course baseline characteristics and self-assessed knowledge and understanding questionnaire which will be emailed to you.
- Two short questionnaires, one at the beginning of the SBE course half-day session and the other at the end of the session.
- Post-course general evaluation and self-assessed knowledge and understanding questionnaire which will be emailed to you.
- You are also being asked to consent to being interviewed via Microsoft Teams, when you will be asked to reflect on the experience of the SBE course and the impact it had on you. The interview will take place approximately three months after the SBE course session, dates of this will be provided at registration.

The results of the questionnaires and everything you say within the interviews will be anonymised and, whilst we will be reporting on the findings from these data in general, your personal confidentiality will be maintained (your name, location etc. will not be identified). If you require more information you may contact the investigators named at the top of this invitation.

**What will happen to the information you take about me?**

All information which is collected about you during the course of the study will be kept strictly confidential. Any information about you will not be held in any format that would allow anyone to trace information back to you. A record of the study design, participants and allocated sample numbers will be held separately within the NHS Orkney premises and may be inspected by RGU regulatory authorities at any point. All information received will be stored, accessed and destroyed in accordance with RGU ethics procedures.

The results of the research study will be fed back to the research team, used for analysis purposes and considered for publication.

The questionnaire and interview data will be analysed, and a report will be given to NES to consider improvements for the future delivery of this training intervention. It is also hoped that the data will provide a report of publishable interest, in a relevant education journal. Once data has been analysed, participants can email the project team to request a copy of the report. The whole dataset will be seen only by the research team and no identifiable data will be shared with others. In any publication, the data will be presented in a way that means no-one will be able to link the data provided to your identity and name. This will be done by removing your name from the data during

entry (questionnaires) or transcription (interviews) and using a neutral identification number to discriminate between participants thereafter. The personal data collected will only be used to support legitimate research activities that are in the public interest.

Information about the NES corporate privacy policy can be found at: https://www.nes.scot.nhs.uk/privacy-and-data-protection.aspx

Information about the Robert Gordon University Research Data Management Policy can be obtained by email request to the PI.

**What are the possible benefits of taking part?**
The results of this study will help to inform and develop future training for pharmacists in the General Practice Clinical Pharmacy space and beyond into the wider Pharmacy workforce.

**Who has reviewed the study?**
The study has been reviewed by the Ethics Committee (SERC) at the School of Pharmacy & Life Sciences, Robert Gordon University.

**Contact for further information**
If you have any questions or require any further information, please contact:
Lyndsay Steel (PI) on the email provided below.

**Principal Investigator (PI):**
Mrs Lyndsay Steel: lyndsay.steel1@nhs.scot

**Supervisors / Co-investigators:**
Professor Scott Cunningham: s.cunningham@rgu.ac.uk
Mr Gordon Rushworth: gordon.rushworth@nhs.scot
Dr Tesnime Jebara: t.jebara1@rgu.ac.uk

**If I am interested in taking part what do I need to do next?**
If you are happy to take part, you can now complete the consent form.

Date: 12/12/21

Version Number: 1

**Thank you for reading this information sheet.**

## Appendix 6: Participant Consent Form

Participant Informed Consent Form

**Name of Investigators:**

Lyndsay Steel (Principle Investigator)

**RGU supervisor(s)/Co-investigator(s):**

Prof. Scott Cunningham

Dr Tesnime Jebara

Gordon Rushworth

**Collaborators:**

Scott McColgan-Smith

Dr Julie Mardon

Dr Vicky Tallentire

Laura McAuley

**Title of Study:** An evaluation of a simulation-based education course designed for general practice clinical pharmacists.

**Study Number: SBE 1** **Participant Identification Number: ___**

I, the undersigned, confirm that (please initial on each line as appropriate):

| | | |
|---|---|---|
| 1. | I confirm that I have read the information sheet dated 12/12/21 (version 1) for the above study. | ___ |
| 2. | I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily. | ___ |
| 3. | I voluntarily agree to participate in the project. | ___ |
| 4. | I understand I can withdraw at any time without giving reasons and that I will not be penalised for withdrawing nor will I be questioned on why I have withdrawn. | ___ |
| 5. | The procedures regarding confidentiality have been clearly explained (e.g. use of names, pseudonyms, anonymisation of data, *etc.*) to me. | ___ |
| 6. | I agree to my interview/focus group being audio/video recorded. I understand that anonymised quotations from this interview may be used for presentations and publications. | ___ |
| 7. | I hereby assign copyright of any material obtained, for the purposes stated above, and understand that no payment will be offered in return | ___ |

| | | |
|---|---|---|
| 9. | I agree that I may be contacted by the study team for future ethically approved studies. I understand identifiable contact information will be kept after the end of this study and this information will be held in accordance with the Data Protection Act 2018 and General Data Protection Regulation. | — |
| 10. | The use of the data in research, publications, sharing and archiving has been explained to me. I agree for my information to be stored on NHS Orkney servers. | — |

**Participant:**

| | | |
|---|---|---|
| Name of Participant | Signature | Date |

**Research Investigator / Collaborator:**
***I confirm that I have explained to the participant named above, the nature and purpose of the study.***

| | | |
|---|---|---|
| Lyndsay Steel | | 30/12/21 |
| Name of Research Investigator | Signature | Date |

Date: 12/12/21

Version Number: 1

## Appendix 7: Post Course Evaluation

**Simulation-based Education course for General Practice Clinical Pharmacists (GPCP)**
**Course Evaluation Questionnaire**

Thank you for attending the Simulation-based Education (SBE) course for GPCPs working in general practice. The feedback you provide will help us to shape future SBE courses to ensure we meet training needs and provide appropriate support. Please be honest in your evaluation as it is extremely important that we get accurate feedback.

1. **Name:**

2. **Email address:**

3. **Course Venue:**

4. **Course Date:**

5. **Please rate the venue for the following aspects:**

| | Excellent | Good | Average | Poor | N/A |
|---|---|---|---|---|---|
| Public Transport Links | | | | | |
| Parking Availability | | | | | |
| Location of Venue | | | | | |
| Refreshments | | | | | |
| SIM room | | | | | |
| Observation and de-brief room | | | | | |
| Sound and visual quality | | | | | |

6. **The learning objectives for the SBE course were clearly stated**

◯ Strongly Agree ◯ Disagree ◯ Neutral ◯ Strongly Disagree ◯ I don't know

7. **By the end of the SBE course, how fully were the pre-defined learning outcomes met?**

| | Fully Met | Partially Met | Not met | Unable to comment |
|---|---|---|---|---|
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

8. **The simulation cases were pitched at the right level to meet the learning objectives:**

◯ Strongly Agree ◯ Disagree ◯ Neutral ◯ Strongly Disagree ◯ I don't know

9. **The information I received prior to the SBE course about the format of the session provided me with:**

◯ Too much detail ◯ Just the right amount of detail ◯ Not enough detail

10. **The facilitators present at the course added benefit to my experience and learning:**

◯ Strongly Agree ◯ Disagree ◯ Neutral ◯ Strongly Disagree ◯ I don't know

11. **Overall, how would you rate the SBE course:**

12. **Please add any other comments you would like to make on the quality of the training session below:**

13. **Thinking about the SBE course you have attended today, is there anything you would suggest we change when this is delivered to the next group of GPCPs?**

14. **Do you have any other comments or suggestions about the SBE course?**

## Appendix 8: Pre and Post Course Questionnaires

# PRE COURSE: NES Advanced General Practice Clinical Pharmacist (GPCP) Simulation Course

Thank you for registering to participate in the NES Advanced GPCP Simulation Course. We hope you will find your day extremely useful and enjoyable.

Many thanks for agreeing to take part in my research degree which is exploring the impact of Simulation Based Education on General Practice Clinical Pharmacists.

Please take around 5-10minutes to complete this important feedback questionnaire.

Should you have any questions regarding the questionnaire please email: lyndsay.steel1@nhs.scot (mailto:lyndsay.steel1@nhs.scot)

* Required

* This form will record your name, please fill your name.

## General Information

1. Please provide your email address *

2. Please confirm your email address *

6. How long have you been a pharmacist in primary care/general practice? *

- ◯ 0-3 years
- ◯ 4-6 years
- ◯ 7-9 years
- ◯ >10 years

7. How long have you been a pharmacist in primary care/general practice? *

- ◯ 0-3 years
- ◯ 4-6 years
- ◯ 7-9 years
- ◯ >10 years

8. Have you previously worked in Community Pharmacy? *

- ◯ Yes
- ◯ No

9. If you have previously worked in Community Pharmacy, how long was this for? *

- ◯ 0-3 years
- ◯ 4-6 years
- ◯ 7-9 years
- ◯ >10 years

10. Have you previously worked in Hospital Pharmacy? *

- ◯ Yes
- ◯ No

11. If you have previously worked in hospital pharmacy, how long was this for? *

- ◯ 0-3 years
- ◯ 4-6 years
- ◯ 7-9 years
- ◯ >10 years

12. Are you a qualified Pharmacist Independent Prescriber? *

- ◯ Yes
- ◯ No

13. How long have you been qualified as a Pharmacist Independent Prescriber? *

- ◯ 0-3 years
- ◯ 4-6 years
- ◯ 7-9 years
- ◯ >10 years

14. Are you actively prescribing in your current role? *

- ◯ Yes
- ◯ No

15. Please identify which other training you have completed in addition to the prerequisites: *

- [ ] Advanced Clinical Examination and History Taking Skills (ACEs)
- [ ] Postgraduate Diploma
- [ ] Postgraduate Masters
- [ ] Disease specific modules/diplomas (i.e. Asthma or COPD modules from Education for Health)
- [ ] Teach and treat training
- [ ] Other

## PRECOURSE SELF ASSESSMENT

This section will ask you to agree or disagree with a series of statements relating to your assessment of your consultation and clinical skills before undertaking the course. Please take time to consider each statement.

16. CONSULTATION SKILLS:

Please indicate your level of agreement with the following statements *

| | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|---|---|---|---|---|---|
| I know how to structure a consultation | ○ | ○ | ○ | ○ | ○ |
| I know the key skills to undertake a person-centred consultation | ○ | ○ | ○ | ○ | ○ |
| I have experience in undertaking a variety of consultations | ○ | ○ | ○ | ○ | ○ |
| I feel confident in undertaking consultations | ○ | ○ | ○ | ○ | ○ |
| I know how to take an effective clinical history | ○ | ○ | ○ | ○ | ○ |
| I feel confident in taking an effective clinical history | ○ | ○ | ○ | ○ | ○ |
| I feel consultation skills training is relevant to my role | ○ | ○ | ○ | ○ | ○ |
| I have been given feedback on my consultation skills | ○ | ○ | ○ | ○ | ○ |
| I have given others feedback on their consultation skills | ○ | ○ | ○ | ○ | ○ |

17. CLINICAL SKILLS:
Please indicate your level of agreement with the following statements *

| | Strongly Disagree | Disagree | Agree | Strongly Agree |
|---|---|---|---|---|
| I know how to take a pulse | ○ | ○ | ○ | ○ |
| I have experience in taking a pulse | ○ | ○ | ○ | ○ |
| I feel confident in taking a pulse | ○ | ○ | ○ | ○ |
| I know how to take a manual blood pressure | ○ | ○ | ○ | ○ |
| I have experience in taking a manual blood pressure | ○ | ○ | ○ | ○ |
| I feel confident in taking a manual blood pressure | ○ | ○ | ○ | ○ |
| I feel confident in taking an effective clinical history | ○ | ○ | ○ | ○ |
| I have good knowledge on diagnosis of long term conditions | ○ | ○ | ○ | ○ |
| I have good knowledge of the drug treatment in long term conditions | ○ | ○ | ○ | ○ |
| I have good knowledge of monitoring requirements in long term conditions | ○ | ○ | ○ | ○ |
| I feel confident I could prescribe in the management of long term conditions | ○ | ○ | ○ | ○ |
| I have previously participated in case based discussions | ○ | ○ | ○ | ○ |

| | Strongly Disagree | Disagree | Agree | Strongly Agree |
|---|---|---|---|---|
| I have previously participated in multi-disciplinary case based discussions | ○ | ○ | ○ | ○ |
| I feel confident in making autonomous clinical decisions | ○ | ○ | ○ | ○ |
| I feel confident in making autonomous prescribing decisions across a range of presentations in GP practice | ○ | ○ | ○ | ○ |

# POST COURSE: NES Advanced General Practice Clinical Pharmacist (GPCP) Simulation Course

Congratulations for your performance on the day.

Many thanks for agreeing to take part in my research degree which is exploring the impact of Simulation Based Education on General Practice Clinical Pharmacists.

Please take around 5-10minutes to complete this important feedback questionnaire.

Should you have any questions regarding the questionnaire please email: lyndsay.steel1@nhs.scot (mailto:lyndsay.steel1@nhs.scot)

* Required

* This form will record your name, please fill your name.

1. Please indicate your level of agreement with the following statements *

| | Strongly Disagree | Disagree | Agree | Strongly Agree |
|---|---|---|---|---|
| I had previous experience of simulation | ○ | ○ | ○ | ○ |
| I was ready to undertake this type of learning (SIMULATION) | ○ | ○ | ○ | ○ |
| I would LIKE to undertake further simulation learning | ○ | ○ | ○ | ○ |
| Undertaking simulation increased my confidence in my clinical practice | ○ | ○ | ○ | ○ |
| I left with an better understanding of my learning needs | ○ | ○ | ○ | ○ |
| The cases mix was relevant to general practice | ○ | ○ | ○ | ○ |
| The cases were relevant to the GPCP role in general practice | ○ | ○ | ○ | ○ |

2. Do you have any further comments on your answers above i.e. on case mix, relevance to GPCP role?

# POSTCOURSE SELF ASSESSMENT OF KNOWLEDGE AND UNDERSTANDING

This section will ask you to agree or disagree with a series of statements relating to your assessment of your clinical skills before undertaking the course. Please take time to consider each statement.

## 3. CONSULTATION SKILLS:

Please indicate your level of agreement with the following statements *

| | Strongly Disagree | Disagree | Agree | Strongly Agree |
|---|---|---|---|---|
| I know how to structure a consultation | ○ | ○ | ○ | ○ |
| I know the key skills to undertake a person-centred consultation | ○ | ○ | ○ | ○ |
| I have experience in undertaking a variety of consultations | ○ | ○ | ○ | ○ |
| I feel confident in undertaking consultations | ○ | ○ | ○ | ○ |
| I know how to take an effective clinical history | ○ | ○ | ○ | ○ |
| I feel confident in taking an effective clinical history | ○ | ○ | ○ | ○ |
| I feel consultation skills training is relevant to my role | ○ | ○ | ○ | ○ |
| I have been given feedback on my consultation skills | ○ | ○ | ○ | ○ |
| I have given others feedback on their consultation skills | ○ | ○ | ○ | ○ |

4. POSTCOURSE CLINICAL SKILLS:
Please indicate your level of agreement with the following statements *

| | Strongly Disagree | Disagree | Agree | Strongly Agree |
|---|---|---|---|---|
| I know how to take a pulse | ○ | ○ | ○ | ○ |
| I have experience in taking a pulse | ○ | ○ | ○ | ○ |
| I feel confident in taking a pulse | ○ | ○ | ○ | ○ |
| I know how to take a manual blood pressure | ○ | ○ | ○ | ○ |
| I have experience in taking a manual blood pressure | ○ | ○ | ○ | ○ |
| I feel confident in taking a manual blood pressure | ○ | ○ | ○ | ○ |
| I feel confident in taking an effective clinical history | ○ | ○ | ○ | ○ |
| I have good knowledge on diagnosis of long term conditions | ○ | ○ | ○ | ○ |
| I have good knowledge of the drug treatment in long term conditions | ○ | ○ | ○ | ○ |
| I have good knowledge of monitoring requirements in long term conditions | ○ | ○ | ○ | ○ |
| I feel confident I could prescribe in the management of long term conditions | ○ | ○ | ○ | ○ |
| I have previously participated in case based discussions | ○ | ○ | ○ | ○ |

| | Strongly Disagree | Disagree | Agree | Strongly Agree |
|---|---|---|---|---|
| I have previously participated in multi-disciplinary case based discussions | ○ | ○ | ○ | ○ |
| I feel confident in making autonomous clinical decisions | ○ | ○ | ○ | ○ |
| I feel cofident in making autonomous prescribing decisions across a range of presentations in GP practice | ○ | ○ | ○ | ○ |

# Appendix 9: Focus Group Topic Guide

**GPCP Focus Group Topic Guide/Interview Schedule**

| TDF Domain | COM-B | Question | Probes |
|---|---|---|---|
| Knowledge, Skills, Behavioral Regulation | Capability | Generally, what is the extent of attendance at SBE courses among pharmacist prescribers working within General Practice in Scotland | How common is it in your network to complete a SBE course? How many, where, characteristics, geographic spread?<br><br>How, if at all, is this changing practice norms?<br><br>Do you see the role of the GPCP complementing that of other HCPs? How/how not? |
| Knowledge<br>Skills<br>Memory, attention, and decision processes | Capability | How did you use your SBE experience to change your practice?<br><br>How did participation in the SBE course influence your decision-making skills?<br><br>Can you provide any specific examples? | What/When/Where/How often and with whom do you do it?<br><br>Are there any skills taught / experiences gained that you don't use in your practice?<br><br>What do you think about the importance, in this context, of:<br>• considering individual learning needs and coaching/mentoring: clinical / educational supervision<br>• practice 'rehearsal' opportunity: trying new skills in a low-stakes, low-risk environment, lacking direct scrutiny by others<br>• Decision making and cognitive overload |
| Social Influences | Opportunity | In your experience, what are stakeholder views and experiences of GPCPs in making decisions such as the scenario's on the SBE Course? (Stakeholders: GP's and other clinicians in the practice, patients, senior management teams in pharmacy) | What do you think about the importance of:<br>• taking opportunities to observe, learn from, and share with peers in a safe, simulation-based environment during the SBE course<br>• patients' understanding of the pharmacists role, and willingness to engage with the pharmacist as the clinician<br>• clinical reasoning: decision making, risk management, dealing with uncertainty<br>• autonomous practice |
| Environmental Context & Resources | Opportunity | What support do you think is required for the implementation / further development of SBE Courses and delivery of the lessons / skills learnt within? | What do think about the importance of:<br>• considering the regulatory context and medical-legal issues, legal responsibilities and accountabilities, indemnity insurance<br>• developing guidance on processes and how to implement skills obtained in the SBE course into day to day activities.<br>• cultural change: dealing with things that go wrong / errors |
| Social/Professional Role and Identity | Motivation: Reflective | In your experience, what is the extent of integration of such | What are the characteristics of the clinical workload / role using advanced practice skills undertaken by such pharmacists? |

| | | | |
|---|---|---|---|
| | | clinical pharmacists to the multidisciplinary GP team? | What have been the enablers to your integration into the MDT?<br><br>What do think of the importance of:<br>• professional Identity – particularly the need to be viewed as - independent clinicians, responsible decision-makers, and interprofessional collaborators<br>• being 'accepted' by colleagues and avoiding acrimonious disputes between different professions working in GP practice |
| Beliefs about Capabilities, Beliefs about Consequences Memory, attention and decision processes | Motivation: Reflective | How has the completion of an SBE course modified your / do you feel it would modify your beliefs, perceptions, decision making and clinical practice behaviours? | How do you feel completing the SBE course could / has affected your:<br>• confidence in your own clinical capabilities?<br>• Thoughts about the positive / negative consequences of using advanced practice skills obtained on the SBE course – any examples? |
| Optimism, Intentions and Goals | Motivation: Reflective | How optimistic are you that using skills gained from SBE courses will become an integral part of GPCP practice in the future? | What further, if anything, do you intend to do to develop use of skills / learning gained from the SBE course in your practice?<br>Do you have any ambitions / endpoints you want to achieve? |
| Reinforcement, Emotions | Motivation: Automatic | What are the barriers and facilitators to the use skills / learning gained from the SBE course | What may act as a reward or incentive to using skills / learning gained from the SBE course?<br>What would help reinforce this clinical decision making and autonomous practice as a normal part of the pharmacists' role?<br>How would worries / fears of using advanced practice skills gained from the SBE course affect you practising?<br><br>What do think of the importance of:<br>• positive reinforcement from others on the role, use of skills and abilities e.g. Scot Gov acceptance/promotion of the role |

**Final Questions**

- Do you have any additional feedback/reflections you would like to share?
- Do you have any questions regarding the research being undertaken or today's focus group?
- Would you like to be sent a summary of the results?

# Appendix 10: Ethics Decision S297

SCHOOL OF PHARMACY & LIFE SCIENCES
Robert Gordon University
Sir Ian Wood Building
Garthdee Road
Aberdeen
AB10 7GJ
United Kingdom
Tel: 01224 262500/2800
www.rgu.ac.uk

Date 24th November 2021

Dear Lyndsay

Re.: An evaluation of a simulation-based education course designed for general practice clinical pharmacists

The School Research Ethics Committee has assessed your application and the overall decision is that there are no ethical issues with your project.

Where research involves NHS staff or patients, approval should be sought via the IRAS system. Please email a copy of this approval letter along with your study protocol to Jill Johnston j.johnston4@rgu.ac.uk who tracks NHS IRAS applications on behalf of Sponsor Nick Fyfe.

Should there be any amendments to this project during the research we would advise you to consult with the convener of the ethics committee as to whether a further ethical review would be required.

We wish you success with your project.

Regards

Dr Colin Thompson
Convener of the School Ethics Review Panel

## Appendix 11: Free text comments from Post Course Evaluation form

| Question | Comments |
|---|---|
| Quality of the training session | • Good experience, challenging consultations, opportunity for feedback.<br>• I thought that it was a very interesting experience, and it highlights that we can learn a lot about decision making by sharing our thoughts and listening to others feedback. The session was well planned and ran smoothly. Some of the scenarios were limited by time constraints.<br>• Variety of clinical cases open for discussion amongst participants. Presenters very positive, encouraging, non-judgemental. Good group size meant we had time to discuss and reflect on each case and consultation.<br>• We were all extremely nervous attending the course as we did not know what to expect. Now I know what is expected and how safe an environment it is to have those open discussions I would feel much better going on a sim course in the future. It was pitched at a particularly good level for the attendees that were there, completed IP and reviewing patients on phone or face to face.<br>• Great experience, we as practitioners need to do this more often.<br>• Really worthwhile - out of comfort zone but huge learning opportunity! Thanks!<br>• Well led, Informative and safe environment.<br>• I thought it was really enjoyable despite being nervous beforehand. Participation in discussion is key to getting the most from it.<br>• Great set up. Having the VC link allowed the consultation to feel more natural. Good variety of cases and opportunity for different discussion points to help expand knowledge base, confidence and onward current practice. Having the opportunity of clinical supervisor for advice was helpful and reassuring and replicates current practice.<br>• The training session was high quality and well thought out factoring in the difficulties of a simulation.<br>• Very helpful and useful course. Facilitators very good. |

| | |
|---|---|
| | • I felt the session was brilliant. At times I forgot it was a simulation! The feedback and discussion with everyone was constructive.<br><br>• I felt the training session was really beneficial to the practice. It was useful that the feedback sessions worked in such a way that we were challenged to recognise the positives and challenges ourselves rather than being told. This made the learning more impactful for me. I also like that the group was quite small as this made it feel like a more safe space to get things wrong. |
| Suggestions for change when delivering again | • Different supervising disciplines e.g. GPs, nurses. They might be able to offer a different viewpoint or feedback?<br><br>• No, I thought it was extremely well put together. Initially thought it would have been good to know cases, but after session fully agree that withholding case details is much more beneficial to overall learning.<br><br>• I really enjoyed the three scenarios, and they were pitched at the correct level. It became evident from the session that our clinical knowledge was not the focus of the session, but your knowledge will to an extent dictate how a consultation flows. I therefore think it may be an idea to let the GPCPs know the general clinical areas of the scenarios at the beginning of the session and allowing them as a group to allocate the scenarios amongst themselves to areas where they feel familiar with. I think this would then help people relax as it would feel less like a test as you know what you're expecting, the focus is on the consultation and not knowledge and it would be closer to replicating real life as I don't think many pharmacists in a similar stage in their development as I would go in to a consultation completely unprepared. Conditions such as diabetes and asthma are common, and we encounter them regularly but from my very limited experience annual reviews for these conditions are generally done by specialist nurses within the practice who have level of expertise that someone like myself would not.<br><br>• I think it would be useful to have more information about the format of the day beforehand, not necessarily what the cases would be but how the day would work. I felt quite apprehensive about the day, but I think more detail about the format would have helped. |
| Any other suggestions / comments relating to the SBE course | • I think that this is something that we should be doing on a regular basis in order to have the feedback we need to improve our clinical decision making, in my view a lot of the autonomous decision-making process relates to having the confidence in one's own ability, this is something that takes time to develop and nurture. |

| | |
|---|---|
| | • I think this was a really useful way of learning. I think that pharmacists with different experience and at different stages in their primary care career can improve and develop from attending the SBE course. I think the group set up (with only 4 pharmacists) worked very well. I think if the groups were much bigger some of the quality would be lost.<br><br>• I had a really enjoyable morning and a completely new and effective way of learning for me. It was helpful to see how colleagues handle situations, good to get feedback in a non-judgemental environment and re-assuring that the way I am working isn't completely off the mark compared to my peers.<br><br>• It was excellent and all the facilitators were really encouraging and supportive, particularly given how nervous I was to start with. It would be good to be able to have more sessions like this as they are really helpful. |