INVESTIGATING CURRICULUM BASED TRAINING ON PATIENT HANDOVER WITHIN HIGHER EDUCATION INSTITUTIONS

By

George Frederick Muller

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LIST OF ABBREVIATIONS AND ACRONYMS

AAMC	Association of American Medical Colleges
ABC-SBAR	Airway, Breathing, Circulation-Situation, Background, Assessment, and Recommendation
ALS	Advanced life support
ASHICE	Age, Sex, History, Injuries, Condition, and Expected time of arrival
ATMIST	Age, Time, Mechanism, Injury/Illness, Signs and symptoms, and Treatment
BEMC	Bachelor of Emergency Medical Care
BLS	Basic life support
CINAHL	Cumulative Index to Nursing & Allied Health Literature
DEMC	Diploma in Emergency Medical Care
DeMIST	Demographics, Mechanism, Injuries, Signs, and Treatment
DNR	Do Not Resuscitate
DoH	Department of Health
ECA	Emergency care assistant
ECP	Emergency care practitioner
ECT	Emergency care technician
ED	Emergency department
EMC	Emergency Medical Care
EMSSA	Emergency Medicine Society of South Africa
ERIC	Educational Resources Information Centre
HCert	Higher Certificate
HCP	Healthcare provider
HEI	Higher education institution
H-HCP	Hospital healthcare provider
HPCSA	Health Professions Council of South Africa
HPE	Health Professions Education
HSREC	Health Sciences Research Ethics Committee
ICU	Intensive care unit
ILS	Intermediate life support
IMIST-AMBO	Identification, Mechanism of injury, Injuries identified, Signs and symptoms, Treatment and trends, Allergies, Medications, Background history, and Other information

I-PASS	Illness severity, Patient summary, Action list, Situation awareness and contingency planning, and Synthesis by the receiver
IPE	Interprofessional education
ISBAR	Introduction, Situation, Background, Assessment, and Recommendations
iSoBAR	Identify, Situation, Observations, Background, Agreed plan, and Readback/Responsibility
MBChB	Bachelor of Medicine and Bachelor of Surgery
MISSED IP	Mechanism of injury, Injuries, Signs and Symptoms, Evaluation, Diagnosis, Intervention, Plan for patient management
MIST	Mechanism of injury, Injuries or Illness, Signs and treatment, and Time
NDip EMC	National Diploma in Emergency Medical Care
NQF	National Qualifications Framework
P-HCP	Prehospital healthcare provider
RSA	Republic of South Africa
SAQA	South African Qualifications Authority
SBAR	Situation, background, assessment, and recommendation
SBARM	Situation or presenting problem, Background, Assessment, Recommendations, and Medication and fluid
SBAR-QR	Situation, Background, Assessment, and Recommendation – Questions and Readback
SBME	Simulation-based medical education
SIGNOUT	Sick/DNR, identifying data, general hospital course, news events of the day, overall health status, upcoming possibilities with pan and rational, task to be completed with plan and rationale, and any questions
WHO	World Health Organization
WHO MISSED IP?	"Who" + Mechanism of injury, Injuries, Signs and Symptoms, Evaluation, Diagnosis, Intervention, Plan for patient management?

DECLARATION

I, George Muller, declare that the mini-dissertation that I herewith submit for the master's degree qualification in Health Professions Education at the University of the Free State is my own independent work and that I have not previously submitted it for a qualification at another institution of higher education.

Mr G.F. Muller	**Date**

I with this cede copyright of this product in favour of the University of the Free State.

Mr G.F. Muller	**Date**

DEDICATION

I dedicate my dissertation to my wife (Michelle) and two daughters (Isabella and Lilise). Their unwavering support throughout my study period has not gone unnoticed. I love you all.

I also dedicate this dissertation to my mother, who encouraged and supported me throughout this project. Unfortunately, my dad will not see me graduate but thank you for always having a willing ear and open heart. Your engravement of tenacity has guided me to persist and succeed.

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SELECTED DEFINITIONS AND TERMS

Continuum/continuation of care: In the context of this thesis, continuation of care refers to the handover of a single patient between various practitioners or units in a hospital to enable the holistic treatment of this single patient.

Emergency care practitioner: A healthcare provider (HCP) registered with the Health Professions Council of South Africa [HPCSA] in terms of the Health Professions Act (Republic of South Africa [RSA] Department of Health [DoH] 2017).

Emergency medical services: An organisation or body dedicated to medical rescue, which is staffed and equipped to operate ambulances and medical response vehicles to offer emergency care (RSA DoH 2017).

Healthcare provider (HCP): In the context of this thesis, an HCP is a person with a particular medical qualification, who is registered with the HPCSA and works in a multifaceted healthcare system rendering care to ill, injured, or pregnant patients.

ANT: The acronym ANT is established under the HPCSA as a professional register on which prehospital healthcare providers with a National Diploma in Emergency Medical Care, a critical care assistant, and a Diploma in Emergency Medical Care qualification may register.

Methodology: The various methods that a researcher applies to a study to compile data for research purposes.

Mixed-methods study: In the context of this thesis, mixed-methods research involves utilising quantitative and qualitative methods to enable data collected by different methods to build on each other to ensure vital research.

Triage: From the French word *trier*, it literally means "to sort". The aim is to bring "the greatest good to the most significant number of people, which can be achieved by prioritising limited resources to achieve the greatest possible benefit". Patients are sorted according to a scientific triage scale in order of urgency of their need for treatment; the result is that the patient with the greatest need is helped first (RSA DoH 2012).

SUMMARY

Continuation of care in a healthcare system is reliant on effective communication between professionals. Patient management typically starts in the prehospital environment. Prehospital healthcare providers (P-HCPs) treat patients in an emergent situation. During the prehospital management phase, the handover process begins when a lower-qualified practitioner hands the patient over to a higher-qualified or the most qualified practitioner to elevate the patient's treatment regime. The patient is then transported to an appropriate facility where another patient handover, also known as patient handoff, occurs in the emergency department. The patient will undergo clinical tests to confirm a diagnosis and to ascertain where the patient should be admitted in a multifaceted hospital care system and treated until discharged.

From the above-mentioned multi-stage handover, a patient's medical status is handed over from one practitioner to another several times. However, this handover process has never been formalised by either higher education institutions (HEIs) or the internal protocols of a healthcare system. International standards vary across healthcare systems, and minimal emphasis has been placed on educating students and practitioners on patient handover.

This study aimed to identify the current training presented in higher education healthcare curricula that focuses on patient handover. The curriculum focuses on undergraduate medicine, nursing, and prehospital emergency care practitioner (paramedic) training. The investigation ascertained the gap in current knowledge training practice regarding the dissemination of outcomes in outcomes-based education, with a specific focus on the successful completion of interprofessional patient handover. The study also identified how medical practitioners utilise patient handover protocols in their work environment and how they adapted their patient handover skills, if they did, to influence how patient handover occurs in their environment.

The study involved HEIs in the Bloemfontein area and focused on interdisciplinary fields due to patient handover in a multi-professional healthcare system.

The methodology followed in this research study was the mixed-methods approach, which used a quantitative data-gathering method to build on or emphasise the qualitative data that were collected and researched.

Qualitative data were gathered by evaluating the educational and training content on patient handover in the curricula, using official downloadable programme curriculum documents from the South African Qualifications Authority. However, there was minimal elaboration on the content and outcomes in these curricula. Patient handover outcomes identified in the curriculum content review informed a rapid literature review to determine current national and international training methods and patient handover standards. The information gathered from the curriculum content review was compared with international standards to identify possible gaps in local training curricula for patient handover.

Information from the document review and rapid review was used to compile an HCP questionnaire. The questionnaire gathered information regarding patient handover training and practices from healthcare providers (HCPs). Qualitative and quantitative data were collected using a self-administered questionnaire. The questionnaire gathered demographic data and consisted of both closed- and open-ended questions. The HCPs gave their own opinions and reported their experiences with patient handover.

The information gathered from the evidence was used to conclude current patient handover protocols and to identify how patient handover occurs in most healthcare facilities in Bloemfontein.

Keywords: curriculum development, emergency care practitioners, healthcare practitioner, higher education institutions, interdisciplinary, interprofessional, patient handoff, patient handover

ABSTRACT

Background: Communication between healthcare providers (HCPs) is crucial for holistic patient care and conformance to the continuum of care. Patient handover is viewed as an essential element for aligning this continuum of care in the healthcare environment. The education of HCPs notoriously neglects the topic of patient handover through various healthcare programmes with minimal interprofessional education taking place. The South African Qualifications Authority (SAQA) and quality councils (Council on Higher Education, Umalusi, and Quality Council of Trades and Occupations), guided by the various professional healthcare boards, which provides the benchmark for healthcare education outcomes, fails to incorporate patient handover as a topic of interest into most healthcare programmes curricula. Programme-specific outcomes appear not to reflect patient handover as a priority in healthcare. Poor interprofessional communication is linked to one-quarter of all adverse medical events and prolonged patient admission, with massive cost implications related to the duplication of diagnostic testing. Interprofessional power gradients have been indicated to directly influence how patient handover is conducted.

Aims and objectives: The aim of this study was to investigate the current status of patient handover from a theoretical and practical perspective. The objectives followed to achieve the aim included reviewing the curricula of healthcare programmes published by SAQA. A rapid literature review was conducted to ascertain what national and international recommendations can be made regarding patient handover protocols. An HCP questionnaire was constructed and disseminated to hospital healthcare providers (H-HCPs) and prehospital healthcare providers (P-HCPs) to determine their perceptions of current standards related to patient handover.

Methodology: A sequential mixed-methods design was employed, following a more qualitative approach to data collection.

Methods: A curriculum content review was conducted on the SAQA-published healthcare programme curricula, followed by a rapid literature review. The data from these phases were utilised to construct an HCP questionnaire, to incorporate both H-HCPs' and P-HCPs' responses.

Results: The various methods in this study indicated that patient handover is minimally implemented throughout the various healthcare programmes' curricula. Simulation-based

medical education (SBME) was highlighted as the best method to incorporate patient handover education and to assess the topic. The various healthcare programmes indicated minimal structure during theoretical education, with emphasis on informal learning by higher education institutions (HEIs). P-HCPs indicated the most experience with internationally recognised handover acronyms, while H-HCPs indicated minimal experience on the same topic. There appears to be a large gap between what H-HCPs deem important information during patient handover and the information that P-HCPs hand over. None of the HCPs indicated satisfaction with how current handover practices are done, but most HCPs felt confident with handing over a patient holistically.

Conclusions: The World Health Organization's recommendation to incorporate patient handover into all HCP programmes is highly neglected. Even though patient handover is superficially covered in theory lectures, educational limitations still exist regarding how to incorporate patient handover into teaching and learning. Informal education forms a significant part of this academic topic, with no standard approach adopted in current healthcare systems by either H-HCPs or P-HCPs. Formal assessment on patient handover is not incorporated. SBME encourages the ideal platform for educating, assessing, and providing constructive feedback on patient handover. The theory-practice gap between HEIs and healthcare facilities expands daily. Little interprofessional education is incorporated into healthcare, which directly influences the gap between a unified healthcare system. The less time that is spent on interprofessional education, the greater this gap becomes.

Recommendations: Interprofessional collaboration is required between the various healthcare programmes. Educational institution and HCP collaboration is necessary to increase healthcare programme curricula, while simultaneously adapting to both industry and patient needs.

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CHAPTER 1

ORIENTATION TO THE STUDY

1.1 INTRODUCTION

In this mini-dissertation (article route), a mixed-methods approach was used to investigate patient handover. The investigation included gathering information on current training curricula, current patient handover practices, and best practices for patient handover training. Chapter 1 serves as the orientation of the study, while Chapter 2 provides an extensive literature review. In Chapter 3, the results of the healthcare provider (HCP) questionnaires are presented as an article, and Chapter 4 concludes the study.

Gordon, Hill, Stojan and Daniel (2018:1234) define patient handover as the transfer of both information about and the patient's responsibility or patient's care between HCPs and healthcare settings. This investigation may develop into the construction of new guidelines to introduce specific outcomes in a curriculum that uses outcomes-based education in higher education institutional programmes. This research project was not limited to prehospital emergency medical care (EMC) training but included nursing and medicine to promote the continuation of care in a healthcare system.

Personal experience of the prehospital profession and many conversations with fellow practitioners led the researcher to a clear conclusion that there is a need to standardise patient handover between medical professionals to ensure care continuation. The barriers in patient handover are not clear. The manner in which prehospital healthcare providers (P-HCPs) manage patient handover is not uniform, which leads to critical information being diluted or omitted during patient handover. The need for interprofessional facilitation in patient handover was investigated, along with triage-orientated handover between prehospital practitioners and emergency department (ED) doctors.

The researcher gained profound insight into patient handover through a curriculum content review, a rapid literature review, and questionnaires completed by HCPs to reach a conclusion that answers the research question:

Is curriculum-based training on patient handover by higher education institutions (HEIs) facilitated in healthcare programmes?

From personal experience, the researcher knows that patient handover is introduced during the prehospital Bachelor of Technology EMC course; during which a total of 20 minutes is spent on covering the iSoBAR handover acronym (Identify, Situation, Observations, Background, Agreed plan, and Readback/Responsibility). The researcher's preliminary informal investigation supports the view that training on patient handover throughout a curriculum is either not introduced or is allocated the minimum time and features minimal exposure to practical implementation.

This investigation focused on the undergraduate curricula of medicine, nursing, and P-HCPs and how each course or programme incorporated patient handover.

The literature indicates that patient handover is one of the fundamental elements of patient safety and confirms that good communication between professionals directly affects patient outcome and quality of care (Clark, Squire, Heyme, Mickle & Petrie 2009:S125). Poor handover communication between practitioners has consequences, including a negative effect on the patient, the need for additional testing for diagnoses, and the financial implications of these tests (Sujan, Spurgeon & Cooke 2015:54). Patient handover is an active process that involves the patient, during which information is communicated in a structured and standardised format (De Lange, Van Eeden & Heyns 2018:46). This handover process should lead to effective patient handover and quality patient care and should, ultimately, improve patient outcome (De Lange *et al.* 2018:46).

The literature mentions very little about standardised training in healthcare related to patient handover. This investigation gathered information on current standards in medical profession studies as offered by HEIs.

The investigation followed the way that higher education programmes introduce patient handover following an outcomes-based education curriculum. In this type of curriculum, outcomes should indicate the training related to patient handover. They should include both

receiving a patient from an HCP and handing a patient over to a lower- or higher-qualified practitioner than the practitioner doing the handover.

This investigation into patient handover will assist with curriculum development so that patient handover, with interprofessional facilitation by multiple medical professions, is incorporated into higher education training. The investigation aimed to include patient handover training that would improve the patient outcome; this study is therefore patient-centred.

1.2 BACKGROUND

Fluent and trusted communication between HCPs is crucial for all the patient's details to be effective and holistically conveyed in conforming to the continuum of care of such a patient (De Lange *et al*. 2018:46). De Lange *et al.* (2018:46) explain that patient handover is a high-risk and often overlooked skill, which plays an integral role in accurately providing patient care information and transitioning this care from one HCP to another. Foronda, MacWilliams and MacArthur (2016:37) suggest that healthcare programmes educate professionals to communicate in different ways and that these differences cause much confusion and frustration between HCPs. In investigating the subject of communication between HCPs, Foronda *et al.* (2016:37) list lack of confidence, lack of experience, the complexity of healthcare, the distracting nature of healthcare environments, and lack of structure and standardisation as just some of the barriers to effective communication between HCPs. Gordon *et al*. (2018:1235) note the overwhelming importance of interprofessional education (IPE) and describe the paucity in research as a hampering element for future endeavours.

Within the South African context, healthcare programmes are guided by obtainable outcomes that require competence before a learner can graduate and practise as an HCP. These outcomes are described and listed in the healthcare programme curricula, which are controlled by the South African Qualifications Authority (SAQA).

1.2.1 South African Qualifications Authority (SAQA)-approved patient handover content

HEIs have the freedom to adapt their healthcare curricula towards graduating their students; however, these curricular outcomes must align with the outcomes as outlined by

SAQA and the quality control councils (QCs). SAQA, through guidance from professional healthcare bodies, do not stipulate what educational methods must be employed to incorporate communication, specifically patient handover. Patient handover is an essential topic in international healthcare and Gordon *et al.* (2018:1234) stipulate patient handover incorporation into every healthcare programme. This clarifies that patient handover is both inadequate and eluded in most healthcare programmes. Within the local context of healthcare programmes, as stipulated by the outcomes of SAQA, there is little to no mention that these programmes must incorporate patient handover as an outcome and to what extent patient handover must be included. Educating the new HCPs on how to hand over a patient is left to the discretion of the programmes. The programmes can include teaching and learning through formal and informal educational strategies, but this leaves the question of assessing patient handover.

The use of patient simulations has broadly been discussed to educate and assess students, particularly on patient handover (Foronda *et al.* 2016:39). The researcher examines simulation use to replicate communication skills in a safe environment while simultaneously reproducing scenarios with variable results. To truly educate students on patient handover, the topic must be moved out from underneath each programme and become multidisciplinary if healthcare facilitators want to see significant change (Gordon *et al.* 2018:1238). Assessing patient handover in an interdisciplinary manner would also add to the topic's realism and allow for in-depth discovery on how healthcare programmes require patient handover to be conducted.

1.3 PROBLEM STATEMENT

Patient handover or patient handoff has been identified as the most crucial point during patient management in a healthcare system, and it has been determined to be the "Bermuda triangle" of healthcare (Rommie & Duckworth 2016; Kim, Hur & Kim 2018:14). The Emergency Medicine Society of South Africa (EMSSA 2008:3) identified an algorithm to streamline patient handover, but this algorithm has not been included in professional standards. It has been found that interprofessional power gradients contribute to lowering standards of patient handover in an ED, as these power gradients provoke higher stress levels and cause less teamwork, which ultimately affect the quality of handover and patient safety (Gordon *et al.* 2018:1239). Gordon *et al.* (2018:1238) refer to contemporary patient care's interprofessional nature and propose that medical educators incorporate patient

handover into all healthcare programmes to increase communication efficiency and to lower interprofessional stress during patient handover.

There is, however, a paucity of evidence on education about patient handover internationally, and Gordon *et al.* (2018:1238) make recommendations to identify why this is occurring. Stojan, Mullan, Fitzgerald, Lypson, Christner, Haftel and Schiller (2016:423) report that, even if patient handover had been introduced in a curriculum, students still feel unprepared when patient handover occurred, which results in ineffective patient handover and adverse patient outcomes. Stojan *et al.* (2016:423) further claim that receiving and giving a patient handover is a crucial competency for medical students entering a residency period; however, only 35% of medical schools internationally have included and thoroughly facilitated patient handover in their curricula.

1.4 OBJECTIVES OF THE STUDY

The main objectives of this study were as follows:

a) To gain a deeper understanding of the status of curriculum-based education on patient handover as it is incorporated into medicine, nursing, and prehospital EMC programmes. This objective was achieved through data obtained from official documents describing the curriculum content. The documents in question were drawn from the SAQA homepage (https://allqs.saqa.org.za/) for the specified curricula (curriculum content review).
b) To obtain insight into the trends and practices of global patient handover training curricula. A rapid literature review was conducted concerning patient handover. The aim was to recommend the best training practices (rapid literature review).
c) To determine the perceptions of medical practitioners regarding patient handover. The focus of the HCP questionnaire was to obtain information from participants on their perceptions of patient handover in their medical environment, what (if any) structures are followed during patient handover, their opinions on what should be included in the curricula to incorporate patient handover, and whether they agree or disagree with the perception that seasoned medical practitioners who adapted the manner in which they hand over patients are correct and encompass all relevant medical information during patient handover. The content of the questionnaire was supplemented by the information gathered from the rapid literature review (health provider questionnaires).

The collected information may propose recommendations to improve the training of HCPs on patient handover and indirectly improve patient care.

1.5 RESEARCH QUESTIONS

To meet the objectives of this study, the following research questions were formulated:

a) Do HEIs incorporate patient handover into their current curricula?
b) How do HEIs disseminate information on patient handover, and what best practices are recommended for patient handover training?
c) What are HCPs' perceptions and opinions in public and private sectors about patient handover in their respective medical environments?

1.6 RATIONALE AND OVERALL GOAL OF THE STUDY

The study's overall goal was to determine if standardised patient handover is currently facilitated by healthcare programmes offered at HEIs in Bloemfontein. The rationale is to develop patient handover outcomes to promote interprofessional training, with the sole purpose of elevating the standards for the continuation of care in a healthcare system.

1.7 AIM OF THE STUDY

The study aimed to investigate the current status of patient handover from a theoretical and practical perspective.

1.8 RESEARCH DESIGN AND METHODOLOGY

According to Creswell and Creswell (2018:309), a methodology is a set of procedures that guide the use of a research design. The researcher used the pragmatic paradigm to conduct mixed-methods research. A pragmatist does not necessarily require the epistemological perspective to provide guidance; instead, the methods are applied to answer the question(s) (Hesse-Biber & Johnson 2015:xxxv). Hesse-Biber (2010:11) clarifies and defines ontology as a researcher's assumptions about the nature of living – the researcher builds on this knowledge, using multiple philosophies, by asking the right questions, which, in turn, is defined as epistemology.

The researcher applied a sequential mixed-methods research design with a more qualitative approach (Hesse-Biber 2010:3). Hesse-Biber (2010:4) explains that implementing a mixed-methods design enables researchers to gain a broader understanding of the research problem by utilising both quantitative and qualitative data and not just either numerical or narrative explanations.

Hesse-Biber (2010:5) furthermore identifies mixed-methods research as a development tool that creates a synergistic effect between quantitative and qualitative data gathering. The researcher utilised this developmental tool during the process of data gathering by, firstly, collecting and interpreting qualitative data. The qualitative data were used to shape a questionnaire that HCPs completed with the aim of gathering quantitative data for this study.

First, qualitative data were gathered using a curriculum content review. To further build on the sequential mixed-methods design, the researcher conducted a rapid literature review, using well-known databases to collect information on national and international standards concerning curriculum-based training on patient handover by HEIs.

The researcher used the information gathered from the qualitative phase of the study to construct a questionnaire that enabled quantitative and qualitative data gathering in relation to current medical industry practices. Using sequential timing, the researcher collected and analysed the qualitative data that were gathered and used the findings to formulate defined questions to collect and analyse quantitative data (Ivankova, Creswell & Clark 2015:277). Using qualitative data in a study that applies an exploratory design enabled the researcher to gather information to develop a questionnaire to collect quantitative data. Both quantitative and qualitative data were therefore used to answer the study's research questions (Ivankova *et al.* 2015:277).

The curriculum content review was conducted when all documentation regarding the current curriculum standards of different programmes related to patient handover, as incorporated into these programmes, was gathered.

A rapid literature review was used to gather information about patient handover incorporated into HEIs' curricula. The researcher investigated national and international trends related to patient handover through HEIs. The literature was sourced using well

known databases, with specific reference to incorporating and disseminating information on the patient handover process in curricula for the various medical professions.

Finally, HCP questionnaires were constructed to determine HCPs' perceptions of incorporating patient handover into medical curricula, whether these medical practitioners conformed to a standard patient handover algorithm, and the historical influence on training in their respective work environments. The printed questionnaires were given to department heads, chief executive officers, shift leaders, and identified prehospital emergency care practitioners (ECPs), who distributed them to HCPs. The HCP questionnaires had no questions that could identify the participants but contained certain demographical, age-, and industry-related questions that, as such, required ethical approval.

1.9 DESCRIPTION OF THE METHODS

The methods used to gather information for this study included a curriculum content review, a rapid literature review, and an HCP questionnaire. The latter consisted of both open- and closed-ended questions that collected both quantitative and qualitative information, which, according to Bickman and Rog (2009:viii), is the definition of mixed-methods research.

1.10 CURRICULUM CONTENT REVIEW

The original plan was to obtain curriculum content from official SAQA documents and specific training content on patient handover from various educational programmes. Despite permission obtained, the researcher did not receive the requested training content from the relevant programme coordinators. It was then decided to only use the official SAQA documents.

SAQA programme curricular information was obtained for the following programmes:

- Undergraduate medical curriculum of the University of the Free State;
- Nursing degree curriculum from the University of the Free State;
- Bachelor of Emergency Medical Care (BEMC) curriculum;
- Diploma in Emergency Medical Care (DEMC) curriculum; and
- Higher certificate (HCert) in EMC.

The focus was on the higher educational healthcare programmes in South Africa, namely medicine, nursing, and EMC, as expounded on the official SAQA website.

The Bachelor of Medicine and Bachelor of Surgery (MBChB) curriculum has fewer stipulated outcomes than the Bachelor of Nursing curriculum and only indicates a brief list of essential communication skills. These skills include language skills, computer skills, interviewing skills, writing skills, referral skills, and teamwork. Under this heading, the researcher could only link the essential communication skill of referral to patient handover. The MBChB curriculum makes no mention of any form of communication or patient handover (SAQA 2018a).

The Bachelor of Nursing programme stipulates communication, under the scope of clinical practice, as reporting and communicating between caregivers for the continuum of care. Furthermore, the outcomes specify to further educate nursing students in using verbal and non-verbal communication skills when in contact with other nurses or peers. A particular outcome in the curriculum stipulates "[s]cientifically communicating assessment findings, nursing care, prescriptions, reports and scientific data", which one can assume relates to bedside handover. This "bedside" handover is the only sentence in the curriculum document that comes close to stipulating patient handover. Further discussions on communication indicate the relevance of legal matters and how to communicate using visual aids (SAQA 2018b).

Prehospital EMC programmes in South Africa have a few higher educational programmes underwritten by SAQA. These qualifications are BEMC, DEMC, and HCert in EMC.

The BEMC curriculum stipulates that the HCP must be proficient in ethically and professionally communicating with peers, patients, and other HCPs. This communication is stipulated to include various forms, such as electronic, verbal, and mathematical. The BEMC curriculum does specify patient handover communication as a clear outcome of the programme (SAQA 2018c).

The DEMC curriculum barely highlights communication in the document. It does, however, stipulate that DEMC students must be competent in communicating clinical information and patient records. Furthermore, the curriculum only highlights the use of communication devices. Patient handover is vaguely stipulated to include patient handover to other professionals or services as per local protocols and procedures. No clarity is provided on which local protocols or procedures must be used (SAQA 2018d).

The HCert in EMC curriculum aligns more with the BEMC programme curriculum, and highlights communication aides for the successful relaying of clinical information. The duplication of a particular sentence, also found in the BEMC curriculum, states competent communication skills to hand over a patient (SAQA 2018e).

1.11 RAPID LITERATURE REVIEW

A rapid literature review aims to write a summary or synthesise existing literature – that is, journals, documents, books, or other sources (University of North Carolina at Chapel Hill 2010) – reported on a topic being studied. The researcher systematically searched for references related to the research question and, in doing so, scrutinised the evidence to confirm that the information is current and valid (Rowland n.d.:4).

Rhoades (2011:61) defines a literature study as having the purpose of assisting the reader to understand the available research on a specific topic and informing readers of the strengths and weaknesses of studies within that body. Fry (n.d.:1) defines a literature study as an objective and critical summary of published research literature relevant to the topic under consideration. A literature study allows a researcher to establish familiarity with the current thinking and research on a particular topic, which allows the researcher to identify areas, previously overlooked or understudied, that can be investigated in the future.

A rapid literature review was used to gather information regarding patient handover and its incorporation into medical training curricula. The research field was broadened to include current curriculum-based training concerning patient handover and training techniques to incorporate patient handover into a curriculum. The historical influence of training regarding exposure to work-integrated learning was also investigated.

Rhoades (2011:65-69) concluded that researchers must be transparent about all literature gathered and indicate the inclusion and exclusion criteria that formed part of their literature study.

The same rapid literature review was conducted to obtain information about patient handover in healthcare systems (cf. Chapter 2). Electronic and printed material gathered from distinguished Internet databases was studied to ascertain current practices of incorporating information on patient handover into medical training. The researcher scrutinised the collected material and verified if the material was relevant to the research

question and if the sources were credible and could improve the research project's validity (Fouché & Delport 2005:127).

The literature obtained from the rapid literature review search criteria was reviewed to discuss the international trends on patient handover in higher education programmes.

1.12 ETHICS AND CONSENT

The researcher obtained the research material ethically and legally and referenced all research material in the dissertation and the rapid literature review obtained from various resources.

1.13 HEALTHCARE PROVIDER (HCP) QUESTIONNAIRE

A good questionnaire produces reliable answers and provides a valid measurement of something a researcher wants to describe (Fowler & Cosenza 2009:376). Fowler and Cosenza (2009:376) stipulate the following as essential characteristics of a good questionnaire:

- The questions need to be consistently understood.
- The participants need to have access to the information required to answer the questions.
- The way that the participants are asked to answer the questions must provide an appropriate way to report what they have to say.
- The participants must be willing to provide the answers called for in the questions.

Before a questionnaire is distributed to participants for completion, specific measures can be taken to ascertain if the questionnaire measures positively against the four criteria stipulated above. Fowler and Cosenza (2009:276) report that these measures include a systematic questionnaire review, cognitive interviews with some participants to ascertain how they will be answering the questions, and a pilot study to determine how the questionnaire will be answered in realistic conditions.

1.13.1 Target population

The target population comprised HCPs currently working in public and private sectors in the Bloemfontein area. The target population included both P-HCPs and hospital healthcare providers (H-HCPs) (cf. Chapter 3).

Students and interns also formed part of the target population. These participants possess valuable information about the current training curriculum they are subjected to and how training processes develop them to be prepared for the healthcare system.

1.13.2 Description of sample and sample size

The following selection criteria were applied for inclusion to participate in the questionnaire:

- HCPs working in the public sector of various hospitals and clinics; and
- ECPs currently practising as registered practitioners in the private sector (the public sector has no registered ECPs with National Qualifications Framework-aligned qualifications).

The sample of participants contained approximately 80 members who fit the criteria stipulated above; however, due to student and intern rotation and the COVID-19 pandemic that caused staff shortages, the number of participants differed. Using purposive sampling on HCPs and ECPs, would allow for transferability of results obtained.

1.13.3 The pilot study

A pilot study was conducted to perform a pre-test of the questionnaire and to ensure the questionnaire's validity, reliability, and trustworthiness. The questionnaire was provided to one P-HCP and one H-HCP. Pilot study participants completed the questionnaire to identify errors in the questionnaire, such as numbering errors, to determine whether the questions were clear and unambiguous, and whether the flow of the questionnaire worked.

1.13.4 Data gathering

Before the questionnaire was handed out, the researcher distributed participation requests to the Free State Department of Health (DoH) and the University of the Free State.

Once the researcher received permission from both entities to conduct the study, the facility managers were contacted to arrange data collection. The researcher obtained consent from the various prehospital practitioners through the completion of the questionnaire. The questionnaire was formatted to include permission from these practitioners once they voluntarily completed the questionnaire. The permission request letter, the questionnaire, and the information letter were sent to the individual managers via email, messaging, or were hand delivered. The content of the questionnaire was determined by the data obtained during the previous processes. Data included demographic information, training received on patient handover, and challenges experienced with patient handover.

1.13.5 Data analysis

The data received from the HCP questionnaires were entered into the Google Forms platform to consolidate all the answers in the questionnaires. Once all the questionnaires had been entered, the researcher extracted the data to a Microsoft Excel spreadsheet. The HCP questionnaire could only be constructed when the qualitative phase of the study was completed. The rapid literature review guided the process for the construction of the HCP questionnaire. The researcher obtained guidance from a biostatistician once the study reached that point of the process. The Excel spreadsheet containing all the HCP questionnaire data was sent to a biostatistician, who verified the results.

Descriptive statistics, namely means and standard deviations or medians and percentiles, were calculated for continuous data. Frequencies and percentages were calculated for categorical data.

1.13.6 Data interpretation

The data gathered through the HCP questionnaire enabled the researcher to obtain relevant opinions on patient handover in real-world circumstances. The data also answered critical questions about training used to develop patient handover protocols or curricula at HEIs. The information strengthened the arguments identified by the rapid literature review, and the themes and subthemes found in the data and the rapid literature review formed the foundation for recommendations for further investigation.

The researcher interpreted and analysed the HCP questionnaire's data using quantitative and qualitative data-interpretation methods.

1.13.6.1 *Qualitative data interpretation*

Qualitative data interpretation is described as analysing narrative data in raw material and partially processing it. To do this, a researcher must code and create particular themes for the data that have been gathered (Tashakkori & Teddlie 2009:301). In conjunction with the rapid literature review, information obtained through interpreting the qualitative data allowed the researcher to create themes and subthemes to construct the HCP questionnaire's questions (Tashakkori & Teddlie 2009:301).

1.13.6.2 *Quantitative data interpretation*

Inferential statistics is defined by Tashakkori and Teddlie (2009:302) as creating an estimate from the data to test the research question created from the research conducted. The researcher attempted to provide accurate information that would answer the research question relating to whether HEIs incorporate patient handover into their curricula and the effect of this inclusion (Tashakkori & Teddlie 2009:303).

1.13.7 Ethics and consent

The HCP questionnaire stipulated that the participant gives consent to participate in the research by completing the questionnaire. All information provided in the HCP questionnaire was treated as confidential. The researcher did not request personal information in the questionnaire and only communicated with the dedicated person the HCP questionnaire was handed to.

1.14 VALIDITY, RELIABILITY, AND TRUSTWORTHINESS

According to the literature, it is difficult to separate the validity, reliability, and trustworthiness of research from one another, as they are all essentially intertwined. Nieuwenhuis (2015:80) explains that validity and reliability are referred to as credibility and trustworthiness when dealing with qualitative research. Nieuwenhuis (2015:80) further explains that trustworthiness must include credibility, applicability, dependability, and conformability as the critical criteria for establishing trustworthiness. These definitions are elaborated upon further in the following sections.

1.14.1 Validity

Pietersen and Maree (2015:216) define validity as the extent to which the instrument used measures what it is supposed to measure. Maree (2015:305-306) distinguishes between internal validity as credibility and external validity as transformability. He elaborates that internal validity or credibility is the assurance that the researcher's conclusions stem from the data. At the same time, transferability refers to using definite descriptions by the participants in the study and how the participants can be linked to the study in question.

1.14.2 Reliability

Pietersen and Maree (2015:215) explain an instrument's reliability as being able to use the same instrument at different times and with different subjects from the same population and receiving the same results.

1.14.3 Trustworthiness

Bazeley (2015:305) links trustworthiness to the transparency of research, and states that readers must understand how the results or conclusions were reached and what problems the researcher experienced in achieving these outcomes. Transparency can be achieved by using quantitative and qualitative research designs and combining the methods to form a mixed-methods design.

In this protocol, the mixing of methods was done in the final questionnaire (HCP questionnaire). The qualitative data analysis was conducted using the curriculum content review and the rapid literature review. Data collected from the curriculum content review and the rapid literature review were used to construct the HCP questionnaire as the last phase of the protocol. The HCP questionnaire was administered in an attempt to increase the validity of the research.

1.15 ETHICAL CONSIDERATIONS FOR THE STUDY

1.15.1 Approval

Approval for the research project was obtained from the Health Sciences Research Ethics Committee (HSREC) of the University of the Free State, the dean of the Faculty of Health

Sciences, and the vice-rector: Academic, at the University of the Free State. Ethical approval was obtained from the DoH to conduct research with public sector employees as the participants. Ethical permission was obtained from the DoH: Resource Development for individuals in public sector institutions to participate in the research.

1.15.2 Informed consent

It was not required to obtain informed consent from the participants because the questionnaires handed to them were anonymous, and through completing the questionnaire, written consent was obtained. A short overview of the study and its purpose was provided to the participants to explain what was required. This overview was provided in English and stipulated the anonymity and use of the questionnaire for data-collection purposes.

1.15.3 Right to privacy

The information received from the HCP questionnaire from the participants was kept strictly confidential. Permission was obtained to use the institutions' particulars. However, specific information was not linked to particular institutions.

1.16 SCOPE OF THE STUDY

This study was conducted in Health Professions Education (HPE) and fell under academic programme development. The research was interdisciplinary as it spanned across HPE, HEIs, and medicine.

1.17 VALUE, SIGNIFICANCE, AND CONTRIBUTION OF THE STUDY

1.17.1 Value

This study's value lies in the fact that the data can be adapted to ensure that students enrolled in HEIs for medicine-orientated programmes receive sufficient instruction in patient handover through the curriculum, regarding both interprofessional handover and interdisciplinary handover of patients in the healthcare system.

The study incorporated this information that guides the practitioner to use either taught methods or to adapt an approach to hand over a patient – a technique that focuses on the patient and the continuum of care in a multifaceted healthcare system.

1.17.2 Significance

This study could contribute significantly to the introduction of curriculum-based training on patient handover. Patient handover can eventually be implemented in curricula of any medicine-orientated programme that must prepare a practitioner to medically treat or manage a patient, both physically and psychologically, within a healthcare system. The elements of a healthcare system are intertwined because it consists of different facilities, professions, people with different personalities, levels of medical training, etc.

Incorporating patient handover into the curricula for developing medical professionals enables practitioners to effectively hand over patients once their treatment or management is completed, without the next practitioner having to reconfirm or redo a test. Patient handover effectiveness can be incorporated into forwarding handover (handover for further management) or backward handover (handover after patient management has been done) in a medical facility or between different facilities or professions in the healthcare system.

1.17.3 Contribution

This research's contribution could have the potential to save costs in all healthcare systems, as it could reduce the duplication of medical tests and irrelevant medical testing and improve facility preparation for receiving patients and efficiency. Ultimately, it could benefit patients by improving the continuation of care between different healthcare system specialities, from prehospital patient management to patients' discharge.

This research aimed to guide the adaptation of current medical curricula to include theoretical and practical aspects of training on patient handover, which will allow all medical students to learn how to communicate effectively with different medical professionals, with the focus on the patient and the continuum of care.

1.18 TIME SCHEDULE

Table 1.1 presents the schedule that was followed for the study, which might have changed due to personal and participant scheduling.

Table 1.1: Time schedule for the study

Stage	Date
Preliminary literature study	November 2018 – February 2019
Protocol	February 2019 – October 2019
Protocol peer evaluation	25 July 2019
Evaluation Committee – Slideshow	September 2019
Language and grammar editing	September 2019
HSREC	March 2020
Document review	May 2020
Clarification questionnaire	May 2020
Literature study – Continuous process	June 2020 – August 2020
Methodology 1 – Document review with clarification questionnaire	March 2020 – May 2020
Methodology 2 – Literature study	May 2020 – August 2020
Methodology 3 – Questionnaire	August 2020 – September 2020
Compilation of research findings	September 2020
Draft article	September 2020 – October 2020
Finalise article	October 2020
Compilation of thesis	September 2020 – October 2020
Finalisation of thesis	October 2020 – November 2020

1.19 SCHEMATIC OVERVIEW OF THE STUDY

A schematic overview of how the study unfolded is as follows:

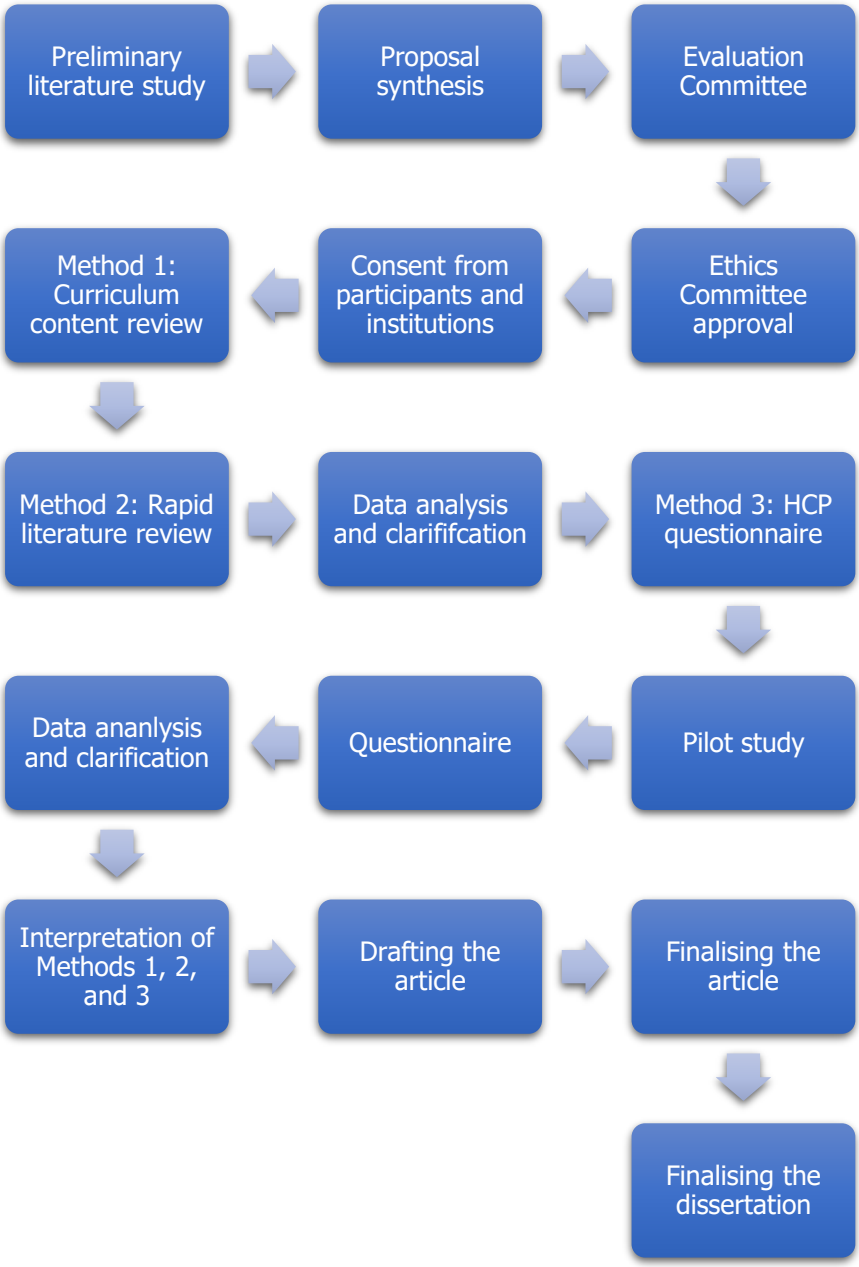

Figure 1.1: Schematic overview of the study
Source: Compiled by Author

1.20 LAYOUT OF THE DISSERTATION

The dissertation is arranged as follows:

- Title page
- Index
- List of appendices
- List of figures
- List of tables

- List of abbreviations and acronyms
- Declaration
- Dedication
- Acknowledgements
- Selected definitions and terms
- Summary
- Abstract
- Chapter 1: Orientation to the study
- Chapter 2: Rapid literature review
- Chapter 3: Article for publication: Limitations on patient handover in real-world healthcare systems addressed through Health Professions Education: A mixed-methods study
- Chapter 4: Conclusion and recommendations
- References
- Appendices

CHAPTER 2

RAPID LITERATURE REVIEW

2.1 INTRODUCTION

The previous chapter provided an overview of the study and addressed the curriculum content review on patient handover teaching and training. This chapter provides a theoretical basis of patient handover teaching, training, and practice. Information for this chapter was obtained through a rapid literature review.

2.2 METHODOLOGY

A rapid literature review was conducted to obtain literature on patient handover in healthcare systems. The World Health Organization's (WHO) guidelines on the steps to perform a rapid literature review were used (Tricco, Langlois & Strauss 2017). Firstly, the topic selection and protocol development were done in preparation for the entire study.

Thereafter, a literature search was conducted. The following keywords were used to perform literature searches: Paramedic* handover; optimis* AND emergenc* AND handover; barriers AND support* AND handover; Education* AND Improv* AND handover; Education* AND simulation AND handover; Importance AND handover AND emergency. EBSCOhost databases were used to collect relevant and recent articles. These databases include Academic Search Ultimate; Africa-Wide Information; Cumulative Index to Nursing & Allied Health Literature (CINAHL) – full text; E-book Collection; Education Source; Educational Resources Information Centre (ERIC); Health Source: Nursing/Academic Edition; Library info sciences; MEDLINE; Open Dissertation; and Teacher Reference Centre.

Applying strict date ranges (2015 – 2020) limited the researcher's results to 54 of the most recent articles. Articles were numbered numerically as they were collected.

The next steps were screening and selection of data. The following articles were excluded due to their titles not speaking to the research criteria, their abstract not having information regarding the research topic, and their conclusions not correlating to the research topic: Articles 1, 2, 6, 7, 21, 24, 27, 28, 32, 37, 38, 40, 41, 42, 43, 44, 46, 47, 50, 51, 53, and 54 were excluded based on the explained criteria. Articles 34 and 35 were duplications. Article 10 could not be retrieved from the database. The researcher sorted the remaining articles according to topic relevance and study impact. The following articles were deemed recommended with peripheral data impact: Articles 3, 4, 9, 11, 12, 16, 17, 25, 26, 31, and 52. The following articles were deemed valid and used as primary sources of data extraction: Articles 5, 8, 13, 14, 15, 18, 19, 20, 22, 23, 29, 30, 33, 36, 39, 45, 48, and 49. The breakdown of the articles utilised for the rapid literature review is indicated in Appendix A, Tables A1 and A2.

Finally, the extracted data were displayed under appropriate headings, as follows.

2.3 EXTRACTED DATA

2.3.1 Introduction to patient handover

Patient handover, also known as patient handoff, is defined as transferring information about and responsibility for patients between HCPs (Gordon *et al*. 2018:1234). Patient handover entails conveying essential clinical and other information between HCPs to ensure continuity of care in a healthcare system (Makkink, Stein, Bruijns & Gottschalk 2019:1). McKechnie (2015:353) and Holt, Crowe, Lynagh and Hutcheson (2020:1) define handover partly as transferring professional responsibility and accountability to another professional on either a temporary or permanent basis. McKechnie (2015) uses the word "professional" in this definition to indicate professionals in a healthcare system, even though current healthcare systems conform to a more silo-based approach in patient management. Stojan *et al*. (2016:423) elaborate on this definition of handover by including both the receiving or giving of information. In the current healthcare system, all medical professionals are or should be involved in both receiving and providing information related to patient care to improve the continuity of patient care.

2.3.2 Patient handover necessity

Gordon (2013:1) emphasises that the period in which a patient is handed over is the most vulnerable in the healthcare process. Gordon (2013:1) elaborates by stating that this is when information can become distorted, lost, or misinterpreted, which ultimately affects patient care and safety. Gordon *et al*. (2018:1234) strengthen the above argument by linking inaccurate assessments and diagnoses, delayed and inappropriate treatment, medical errors, and increased morbidity and mortality, prolonged hospital admissions, as well as overall patient satisfaction with inappropriate patient handovers taking place. Gordon *et al.*'s (2018:1234) work is supported by Stojan, Schiller, Mullan, Fitzgerald, Christner, Ross, Middlemas, Haftel, Stansfield and Lypson (2015:281-282), which referenced the Joint Commission's (2007:46) report on quality and safety. The Accreditation Council for Graduate Medical Education identified lapses in communication as the leading root cause of important events in healthcare (Hunt, Wiseman, Gray, Happel, Fabyan, Neubauer, Walker, Barelski, Wieher & Crotty 2020:1). Hada, Coyer and Jack (2018:10) identify inconsistent communication, lack of standardisation, insufficient staff education, unclear work procedures, team culture, and environmental issues as some of the barriers to effective handover.

Nagraj, Harrison, Hill, Bowker and Lindqvist (2018:501) cite a report that claimed that in both England and Wales during 2012, over one million patient safety incidents were reported. Nagraj *et al.* (2018:501) distinguish that 250 000 of these incidents were related to access, admission, transfer, and discharge of patients, which were directly connected to unstructured patient handover and ineffective interprofessional communication. Patient handover in a healthcare system occurs multiple times in the prehospital setting and in the hospital environment. Shahrami, Nazemi-Rafi, Hatamabadi, Amini and Aghajani (2019:1) identify weak communication as a known significant factor responsible for 24% of missed diagnoses in the ED, and the reason that 10% of deaths could have been prevented by eliminating these communication errors.

2.3.3 Interprofessional handover

The prehospital healthcare system includes various qualified HCPs who abide by different scopes of practices. Scopes of practice are regulated by the Health Professions Council of South Africa (HPCSA), which stipulates patient management protocols for each qualification (HPCSA 2018). To increase the level of care required for emergent patients, the lower-

qualified HCPs will hand over the patient to a higher-qualified practitioner with a broader scope of practice. This handover also occurs when a higher-qualified HCP "downgrades" the patient's treatment needs to a lower-qualified practitioner.

Figure 2.1 illustrates and explains how the various P-HCPs can hand over a patient according to the patient's level of care or healthcare management needs.

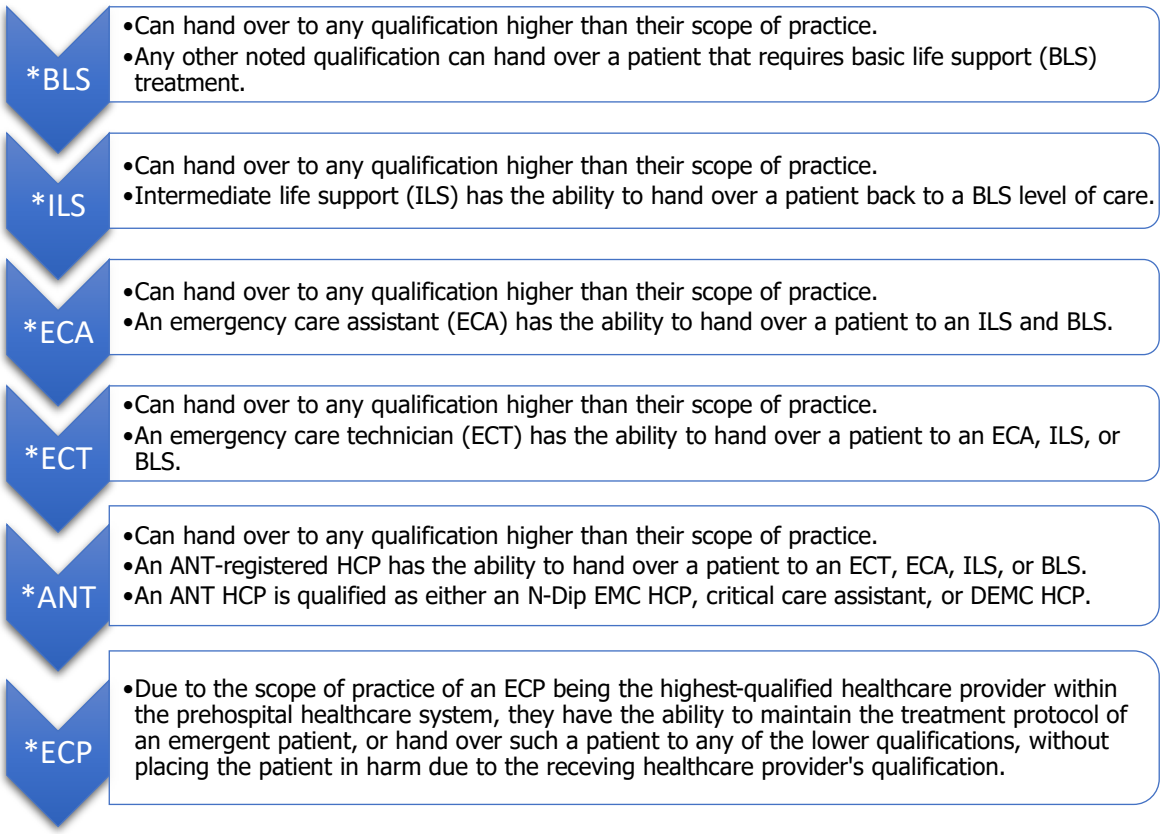

Figure 2.1: Prehospital qualification patient handover guide
Source: Compiled by Author

What can be extrapolated from Figure 2.1 is that the handover processes between P-HCPs are complex; with P-HCPs with different qualifications being permitted to either upgrade or downgrade the level of care required by the patient. Complicating the matter of handover is when a patient is handed over during emergencies where the patient requires a higher level of care.

Figure 2.2 illustrates the handover processes and chains of communication in the hospital environment.

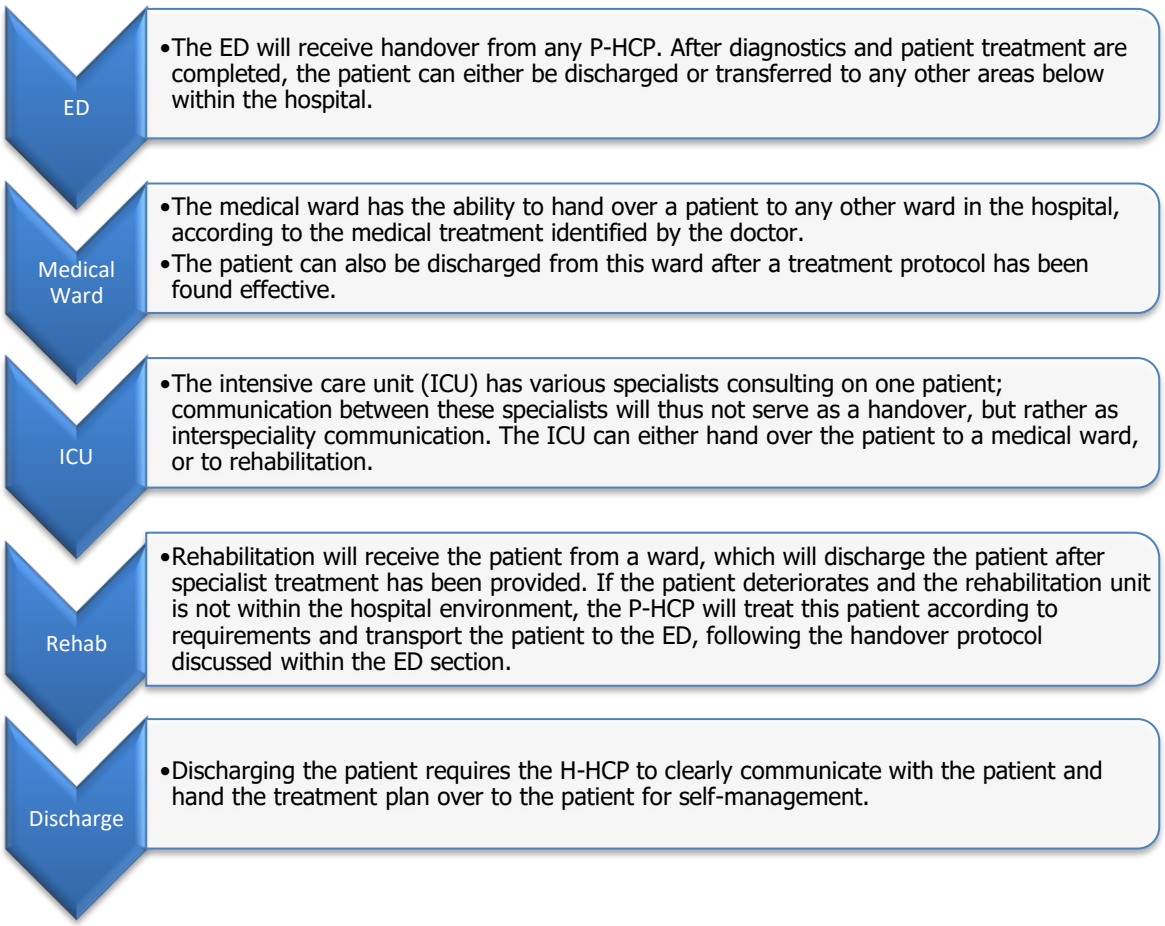

Figure 2.2: Hospital ward patient handover guide
Source: Compiled by Author

McKechnie (2015:354) explains that during a typical ICU handover period, the care of around 20 patients is transferred to the incoming doctor. This handover process might differ in the South African context, but patient handover still occurs throughout a patient's admission to ICU. McKechnie (2015:354) elaborates that the example provided depicts the complexity of information transfer between HCPs. McKechnie (2015:354) elaborates that if communication breakdown occurs, it results in systematic errors, repetitions, delayed decisions, repeated investigations, and incorrect diagnoses with incorrect treatments. The most significant barriers to structured patient handover are telephone calls, extraneous talking and noise, hesitancy by the receiving practitioner to comply with company-enforced handover protocols, and the "human factors" in interprofessional communication, which are caused by the level of professionalism (Fealy, Donnelly, Doyle, Brenner, Hughes, Mylotte, Nicholson & Zaki 2018:81).

2.3.4 Patient handover education

The information collected thus far begs the question: Who is responsible for educating HCPs to effectively hand over a patient, and what educational methods must be used?

Smith, Wadman, Harrison and Beck (2015:45) indicate that the Association of American Medical Colleges (AAMC) identified patient handover as a core activity for graduating medical students. This statement can be extended to include prehospital EMC programmes. Reyes, Greenberg, Amdur, Gehring and Lesky (2016:164) highlight details from American-based quality assurance boards that stipulate that there should be an increase in education regarding the standardisation of handover in current healthcare systems, along with the implementation of handover protocols in the curricula of medical programmes. Starmer, Spector, West, Srivastava, Sectish and Landrigan (2017:320) state that institutional education does not occur in a formal way in medical programmes. Starmer *et al*. (2017:320) state that the educational institution shifts the focus to informal learning in the clinical environment. This informal learning allows for substantial variability in how the learning occurs and what handover methods should be adopted in various settings. Holt *et al.* (2020:1) indicate that Canada's Medicine Faculty and the AAMC deem it an essential competency of their medical graduates and are expected to be entrusted with independent patient handover without supervision.

Gordon (2013:1) states that a global initiative to reduce working hours among medical staff means that patient handover opportunities increased drastically. Gordon (2013:1) elaborates that a great deal of published work has discussed ways of improving handover, but a paucity in evidence was noted by this study. The lack of evidence has left educators with the problem of educating learners according to best practices, without clear guidance on the topic (Gordon 2013:2). Reyes *et al.* (2016:164) conducted a survey to ascertain how medical students are involved in patient handover. The survey results indicated that the medical students participated in the patient handover process, although with little oversight. The survey also identified that fourth-year medical students' need was for formal education or training. Supporting the study conducted by Gordon (2013:2), Stojan *et al.* (2016:423) indicate that much emphasis is placed on educating students on the topic of patient handover, but that this training is ineffective to allow the students to be prepared to perform in this area. They elaborate that medical students are expected to assume patient care responsibilities, including patient handover, without receiving the necessary guidance or educational methods.

With minimal literature about formal education being performed in the local context of South Africa related to patient handover, the researcher found articles explicitly mentioning the barriers to performing patient handover successfully. De Lange *et al*. (2018:47) indicate that HCPs has divided attention during patient handover, which indicates that both P-HCPs and H-HCPs are not focused on continuing care during patient handover. De Lange *et al.* (2018:48) identify four reasons for ineffective patient handover in an ED:

- *No greeting among practitioners:* Lack of interprofessional respect was evident when the prehospital practitioner passed the triage rooms and directly went into the ED without greeting any personnel. In turn, none of the hospital personnel welcomed prehospital practitioners in fear of having to take over the patient. The result was that prehospital practitioners placed patients in a resuscitation room without the needed acknowledgement being provided by the hospital personnel.
- *Inattentive listening:* This was identified as the most frustrating situation during patient handover. Nursing staff in the ED started management on the patient and instructed fellow nursing staff on what to do. This split attention meant that they asked questions after the handover about information that had already been provided during patient handover. Duplication of questions was later identified as a symptom of disrespectful interprofessional behaviour.
- *Exclusion of prehospital practitioners:* This occurs when nursing staff draw the curtains around the patient's bed during patient handover once nursing staff had received the working diagnosis. This exclusion means that prehospital practitioners must wait for the nursing staff to complete their immediate tasks. Placing this barrier between the prehospital practitioner, the patient, and nursing staff presents an opportunity for misleading information transfer or the omission of information.
- *Lack of involvement by patients:* During handover observations, it was identified that patients and their significant others were willing to participate in the handover process but were deliberately excluded. It was found that both patients and their relatives had critical information to provide during the handover process but were not consulted by HCPs.

A survey completed using local prehospital practitioners found that the ten most relevant information topics to be handed over indicated no standardisation between the practitioners and the patient's condition (Makkink *et al*. 2019:3). This evidence indicates that prehospital patient handover occurs without guidance or formal educational training. Makkink *et al.* (2019:3) furthermore identify what acronyms deemed necessary regarding patient

handover the practitioners considered less critical. The lapse in information was extensive. Individualised handover tools excluded essential patient information to where it was mentioned last during patient handover. This evidence indicates that no standard handover acronym tool is used to conduct patient handover or that prehospital practitioners use acronym-based tools.

Many different acronym-based patient handover protocols have been identified in international and local contexts; however, there is limited evidence to indicate which acronym has the most inclusive criteria regarding relevant information during patient handover. Some literature clearly emphasises the SBAR (Situation, Background, Assessment, and Recommendations) acronym in clinical trials (Kim *et al*. 2018:15). The only evidence-based acronym mentioned for the prehospital environment is the DeMIST (Demographics, Mechanism, Injuries, Signs, and Treatment) acronym, described and identified by the EMSSA (2008:3) as the best acronym to use.

The following acronyms were identified by national and international literature as used during patient handover:

SBAR was later adapted to SBAR-QR to include questions and readback (Smith *et al*. 2015:49).

Another modification of the SBAR acronym was the use of iSoBAR in the Australian healthcare system (McKechnie 2015:355).

Moore and Roberts (2018:2) identify the use and implementation of the ISBAR (Introduction, Situation, Background, Assessment, and Recommendations) acronym in their educational environment before student-patient interaction.

Lautz, Martin, Nishisaki, Bonafide, Hales, Hunt, Nadkarni, Sutton and Boyer (2018:288) propose the use of the ABC-SBAR (Airway, Breathing, Circulation-Situation, Background, Assessment, and Recommendation) acronym for use in an ED, specifically related to the handover of paediatric patients.

Another proposed modification created using the SBAR acronym was the SBARM (Situation or presenting problem, Background, Assessment, Recommendations, and Medication and fluid) acronym (Blyth, Bost & Shiels 2017:337).

The SIGNOUT acronym (Sick/DNR [Do Not Resuscitate], Identifying data, General hospital course, News events of the day, Overall health status, Upcoming possibilities with plan and rationale, Task to be completed with plan and rationale, and any questions) can be noted to be purely for hospital ward round use, and as such has limited applicability in all healthcare sectors (Stojan *et al.* 2016:423). Starmer *et al.* (2017:320) state that the SIGNOUT acronym was replaced with the I-PASS (Illness severity, Patient summary, Action list, Situation awareness and contingency planning, and Synthesis by the receiver) acronym in limited implementation areas.

One of the more complicated handover acronyms used includes the phrase "WHO MISSED IP?" (Shahrami *et al*. 2019:2). This acronym was broken down to ask "who", where the handing-over practitioner will provide the patient's identity, name, sex, age, and pre-injury health status (Shahrami *et al.* 2019:2). Only then did the acronym start for MISSED IP to include the Mechanism of injury, Injuries, Signs and Symptoms, Evaluation, Diagnosis, Intervention, Plan for patient management, and the "?" symbol allowed room for questions (Shahrami *et al.* 2019:2).

Considering this information, the question must be asked: Can we identify the problem and rectify it? Recognising that communication is crucial during patient handover, the WHO mandated that standardised approaches to educating HCPs regarding handover should be implemented to improve patient safety (Stojan *et al*. 2016:423). Even though the WHO rates patient handover as of the utmost importance for entering residency, only 35% of medical schools in the United States of America include patient handover in their curricula (Stojan *et al.* 2016:423). For institutions that do have patient handover in their curricula, there is no clear guidance on what it should involve, what tools should be utilised for standard patient handover procedures, and the extent to which HEIs are required to implement this protocol (Gordon 2013:4).

IPE or short learning programmes, which incorporate workshops related to teaching on patient handover, are found to have some value to improve patient care continuity. However, it is worth noting that particular educational institutions still believe that patient handover must be taught and performed while students complete their informal learning through clinical rotations (McKechnie 2015:355). McKechnie (2015:356) elaborates by stating that "'[o]n the job training needs to be planned rather than opportunistic, fusional rather than intrusive, cyclical rather than fragmented, an investment rather than a duty", which indicates that educational healthcare programmes and practitioners must teach with

a common goal in mind. Reyes *et al.* (2016:170) counter this argument by suggesting that all healthcare students participated in patient handover during their clinical rotations and realised that patient handover knowledge would be very valuable in their clinical education. Stojan *et al.* (2016:425) demonstrate through their study that a handover curriculum improved students' clinical skills and enhanced confidence during their clinical rotations in the healthcare system. Holt *et al*. (2020:6) identify that even though students felt more confident in their ability to provide in-depth patient handover, it was found statistically non-superior toward students with less confidence receiving the same education. Lack of confidence is indicative of a learning need among students and demonstrates the requirement of explicit teaching related to the subject of patient handover (Holt *et al*. 2020:6). Stojan *et al*. (2015:286) compiled a feedback questionnaire to gauge the confidence level of their exit-level medical doctors. This questionnaire concluded that even though the students had no formal training or assessment regarding patient handover, they rated themselves as confident in handing over a patient's information correctly and thoroughly. Starmer *et al*. (2017:324) developed strategies for effective patient handover by combining effective teamwork with quality curriculum development and evidence-based research. Their study found a 23% decrease in medical errors and preventable adverse events and a 30% decrease in injuries due to medical errors due to utilising the I-PASS handover acronym (Starmer *et al*. 2017:321).

Smith *et al*. (2015:46) indicate that workshops related to patient handover are rare but should include didactic lectures, group discussions, and role-play activities for all healthcare students before initiating clinical rotations. Smith *et al*. (2015:45) highlight the difficulty of handover workshops for qualified HCPs due to prior handover experiences influencing their learning capabilities and adaptability to newly taught handover content.

Stow, Morphet, Griffiths, Guggings and Morgan (2017:132) identify the importance of IPE for students communicating effectively and working collaboratively. Allocating lecturers to dedicated IPE programmes is required to successfully develop HCP training programmes and the content of such a curriculum (Stow *et al*. 2017:132). Gordon *et al*. (2018:1235) note that IPE is rare, following a lack of evidence found related to IPE on patient handover, which hampers the authenticity of many current handover-focused learning encounters. Hinding, Deis, Gornostayeva, Gotz and Junger (2019:4) focus on communication education where healthcare programmes focus on practitioner and patient communication rather than IPE and intraprofessional education. Gordon *et al*. (2018:1238) highlight the interprofessional nature of patient care, where patient handover must become truly

multidisciplinary if educators want to improve communication and continuity of care. Gordon *et al*. (2018:1238) suggest the longitudinal or vertical alignment of curricula to enhance patient handover retention. The curricula must include the mnemonics of patient handover and the effectiveness of the use of such a tool in various scenarios presented in current healthcare systems.

Stow *et al*. (2017:132) conducted an IPE high-fidelity simulation study that included paramedics, nurses, and physiotherapists. The overlapping patient care protocols were tested in using effective patient handover methods. Stow *et al*. (2017:134) concluded two findings from this study: high-fidelity IPE simulation-based medical education (SBME) is effective to teach patient handover, but that IPE related to SBME is resource intensive and requires a united collaboration approach.

Seaton, Levett-Jones, Cant, Cooper, Kelly, McKenna and Bogossian (2019:194) consider SBME as a unique educational tool in teaching patient handover and state that simulation is "measurable, focussed, reproducible, mass-producible, and importantly, very memorable". Moore and Roberts (2018:2) favour SBME in educating students on patient handover as it improves the content and clarity of handover communication required for the effectiveness of the topic. Kim *et al*. (2018:15) highlight the importance of SBME for improving student communication ability, clinical judgement, ability to manage patient safety, and confidence of medical staff. SBME can reproduce clinical situations effectively, where students can repeatedly practise complex processes that include patient assessment, performing healthcare practices, and patient handover in a safe environment that allows for clinical errors or mistakes (Kim *et al*. 2018:15). Lim and Pajarillo (2016:3) indicate that students struggle with implementing the tools of effective patient handover. They require more exposure to use such a tool effectively (Lim & Pajarillo 2016:3).

Seaton *et al.* (2019:196) incorporated the Kirkpatrick model of evaluating educational outcomes into SBME. SBME must be designed to include engaging and authentic learning opportunities for learners, where patient handover can be incorporated for use in all healthcare industry scenarios in a realistic but non-threatening environment (Seaton *et al.* 2019:195).

Kirkpatrick's evaluation model includes four levels:

- Level 1 is reaction, where the student's degree of satisfaction is measured.
- Level 2 is learning, where the student experiences changes in knowledge and skills.
- Level 3 is behavioural change, where the student is transferred from the simulation environment to the clinical context or situation.
- Level 4 is results, where the patient outcome is improved and the student can create organisational change (Seaton *et al.* 2019:196).

A study conducted by Kim *et al*. (2018:17) measured SBME and peer-learning training outcomes in terms of clinical competence and clinical judgement regarding patient handover. The short-term results indicated no immediate differences, but prolonged exposure to SBME for one month revealed higher clinical competence and improved clinical judgements related to patient handover (Kim *et al*. 2018:17).

Formal assessment and continuous feedback regarding patient handover as an educational topic show limited findings in the literature. Stojan *et al.* (2015:285) indicate that only 35% of exit-level HCPs reported receiving any form of instructional content regarding patient handover. Only 50% of these students received constructive feedback on their individual performances. Data gathered by Hinding *et al*. (2019:4) in Germany that included 31 medical faculties indicated that only two of the 31 faculties assessed patient handover in their curriculum, which linked to constructive feedback post-assessment. Lautz *et al*. (2018:230) conducted an SBME trial that focused on constructive feedback post-simulation. They concluded that students who received feedback and cognitive aids were more likely to incorporate patient handover after a patient simulation scenario was provided. Kim *et al*. (2018:18) support Lautz *et al.*'s (2018:230) findings by stating that "using a debriefing can help learners to evaluate their strengths and weaknesses and to improve their performance".

2.4 CONCLUSION

In this research study, the rapid literature review provided theoretical background on patient handover techniques and how they should be incorporated into healthcare curricula. The consulted literature indicates that a lack of structured patient handover has detrimental effects on patient outcome. Adequate undergraduate training may help to address this critical component of continuity of care.

APPENDIX: TABLES

Table A1: Detailed information on articles searched for the rapid literature review

Article no.	Author(s)	Article title	Primary data	Peripheral data	Excluded data
1	Flynn, D., Francis, R., Robalino, S., Lally, J., Snooks, H., Rodgers, H., McClelland, G., Ford, G.A. and Price, C.	A review of advanced paramedic roles during and after hospital handover of stroke, myocardial infarction, and trauma patients			✔
2	Malfait, S., Van Hecke, A., Van Biesen, W. and Eeckloo, K.	A systematic review of patient participation in bedside handovers on wards with older patients indicates that evidence is urgently needed			✔
3	Bourgault, A.M.	Are patients and family members an essential aspect of bedside handoff?		✔	
4	Evans, S.M., Murray, A., Patrick, I., Fitzgerald, M., Smith, S., Andrianopoulos, N. and Cameron, P.	Assessing clinical handover between paramedics and the trauma team		✔	
5	Smith, C.J., Wadman, M.C., Harrison, J. and Beck, G.L.	Assessment of a brief handoff skills workshop for incoming interns: Do past handoff experiences impact training outcomes?	✔		
6	Barca, K. and Sun, C.	Caring safely through standardised handover during intrahospital transfer of care			✔
7	Fealy, G., Donnelly, S., Doyle, G., Brenner, M., Hughes, M., Mylotte, E., Nicholson, E. and Zaki, M.	Clinical handover practices among healthcare practitioners in acute care services: A qualitative study		✔	
8	McKechnie, A.	Clinical handover: The importance, problems and educational interventions to improve its practice	✔		
9	Wood, K., Crouch, R., Rowland, E. and Pope, C.	Clinical handovers between prehospital and hospital staff: Literature review		✔	
10	N/A	Could not be retrieved			
11	Iedema, R., Ball, C., Daly, B., Young, J., Green, T., Middleton, P.M., Foster-Curry, C., Jones, M., Hoy, S. and Comerford, D.	Design and trial of a new ambulance-to-emergency department handover protocol: 'IMIST-AMBO'		✔	
12	Kwok, E.S.H., Clapham, G., White, S., Austin, M. and Calder, L.A.	Development and implementation of a standardised emergency department intershift handover tool to improve communication		✔	
13	Gordon, M., Hill, E., Stojan, J.N. and Daniel, M.	Educational interventions to improve handover in health	✔		

Article no.	Author(s)	Article title	Primary data	Peripheral data	Excluded data
		care: An updated systematic review			
14	Reyes, J.A., Greenberg, L., Amdur, R., Gehring, J. and Lesky, L.	Effect of handoff skills training for students during the medicine clerkship: A quasi-randomised study	✔		
15	Seaton, P., Levett-Jones, T., Cant, R., Cooper, S., Kelly, M.A., McKenna, L., Ng, L. and Bogossian, F.	Exploring the extent to which simulation-based education addresses contemporary patient safety priorities: A scoping review	✔		
16	Altuwaijri, E.M., Budgen, D. and Maxwell, S.	Factors impeding the effective utilisation of an electronic patient report form during handover from an ambulance to an emergency department		✔	
17	Siemsen, I.M.D., Madsen, M.D., Pedersen, L.F., Michaelsen, L., Pedersen, A.V., Andersen, H.B. and Ostergaard, D.	Factors that impact on the safety of patient handovers: An interview study		✔	
18	Lautz, A.J., Matin, K.C., Nishisaki, A., Bonafide, C.P., Hales, R.L., Hunt, E.A., Nadkarni, V.M., Sutton, R.M. and Boyer, D.L.	Focused training for the handover of critical patient information during simulated paediatric emergencies	✔		
19	Stojan, J., Mullan, P., Fitzgerald, J., Lypson, M., Christner, J., Haftel, H. and Schiller, J.	Handover education improves skill and confidence	✔		
20	Moore, M. and Roberts, C.	Handover training in the workplace: Having a CHAT	✔		
21	Kerr, D., Klim, S., Kelly, A.M. and McCann, T.	Impact of a modified nursing handover model for improving nursing care and documentation in the emergency department: A pre- and post-implementation study			✔
22	Blyth, C., Bost, N. and Shiels, S.	Impact of an education session on clinical handover between medical shifts in an emergency department: A pilot study	✔		
23	Shahrami, A., Nazemi-Rafi, M., Hatamabadi, H., Amini, A. and Aghajani, M.H.	Impact of education on trauma patients' handover quality: A before-after trial	✔		
24	Nathoo, F. and Sun, C.	Implementation of standardized tool for charge RT handover			✔
25	Campbell, D. and Dontje, K.	Implementing bedside handoff in the emergency department: A practice improvement project		✔	
26	Warm, E.J., Englander, R., Pereora, A. and Barach, P.	Improving learner handovers in medical education			✔

Article no.	Author(s)	Article title	Primary data	Peripheral data	Excluded data
27	Alimenti, D., Buydos, S., Cunliffe, L. and Hunt, A.	Improving perceptions of patient safety through standardised handoffs from the emergency department to the inpatient setting: A systematic review			✔
28	Van Graafeiland, B., Forona, C., Vanderwagen, S., Allan, L., Bernier, M., Fishe, J., Hunt, E.A. and Jeffers, J.M.	Improving the handover and transport of critically ill pediatric patients			✔
29	Starmer, A.J., Spector, N.D., West, D.C., Srivastava, R., Sectish, T.C. and Landrigan, C.P.	Integrating research, quality improvement, and medical education for better handoffs and safer care: Disseminating, adapting, and implementing the I-PASS program	✔		
30	Holt, N., Crowe, K., Lynagh, D. and Hutcheson, Z.	Is there a need for formal undergraduate patient handover training and could an educational workshop effectively provide this? A proof-of-concept study in a Scottish medical school	✔		
31	Shahian, D.S., McEachern, K., Rossi, L., Chisari, G. and Mort, E.	Large-scale implementation of the I-PASS handover system at an academic medical centre		✔	
32	Angelow, A.M. and Specht, D.M.	Legal aspects of patient handoff in the emergency department			✔
33	Stow, J., Morphet, J., Griffiths, D., Huggins, C. and Morgan, P.	Lessons learned developing and piloting interprofessional handover simulations for paramedic, nursing, and physiotherapy students	✔		
34	Stow, J., Morphet, J., Griffiths, D., Huggins, C. and Morgan, P.	Lessons learned developing and piloting interprofessional handover simulations for paramedic, nursing, and physiotherapy students			✔
35	Stow, J., Morphet, J., Griffiths, D., Huggins, C. and Morgan, P.	Lessons learned developing and piloting interprofessional handover simulations for paramedic, nursing, and physiotherapy students			✔
36	Stojan, J.N., Schiller, J.H., Mullan, P., Fitzgerald, J.T., Christner, J., Ross, P.T., Middlemas, S., Haftel, H., Stansfield, R.B. and Lypson, M.L.	Medical school handoff education improves postgraduate trainee performance and confidence	✔		
37	Braaf, S., Rixon, S., Williams, A., Liew, D. and Manias, E.	Medication communication during handover interactions in specialty practice settings			✔

Article no.	Author(s)	Article title	Primary data	Peripheral data	Excluded data
38	Olasoji, M., Cross, W., Reed, F., Wang, W., Jacob, S. and Plummer, V.	Mental health nurses' attitudes towards consumer involvement in nursing handover pre and post an educational implementation			✔
39	Hada, A., Coyer, F. and Jack, L.	Nursing bedside clinical handover: A pilot study testing a ward-based education intervention to improve patient outcomes	✔		
40	Bressan, V., Mio, M. and Palesa, A.	Nursing handovers and patient safety: Findings from an umbrella review			✔
41	Bakon, S. and Millichamp, T.	Optimising the emergency to ward handover process: A mixed method study			✔
42	Manias, E., Geddes, F., Watson, B., Jones, D. and Della, P.	Perspectives of clinical handover processes: A multi-site survey across different health professionals			✔
43	Kalyani, M.N., Fereidouni, Z., Sarvestani, R.S., Shirazi, Z.H. and Taghinezhad, A.	Perspectives of patient handover among paramedics and emergency department members: A qualitative study			✔
44	Pun, J., Chan, E.A., Man, M., Eggins, S. and Slade, D.	Pre- and post-evaluation of the effects of the Connect, Ask, Respond, and Empathise (CARE) protocol on nursing handover: A case study of a bilingual hospital in Hong Kong			✔
45	Nagraj, S., Harrison, J., Hill, L., Bowker, L. and Lindqvist, S.	Promoting collaboration in emergency medicine	✔		
46	Dawson, S., King, L. and Grantham, H.	Improving the hospital clinical handover between paramedics and emergency department staff in the deteriorating patient			✔
47	Mallett, P., Thompson, A., Bourke, T. and Shah, S.	Ssssh for handover: Protected medical handover; optimising quality and prioritising safety – a regional initiative			✔
48	Lim, F. and Pajarillo, E.J.Y.	Standardized handoff report form in clinical nursing education: An educational tool for patient safety and quality of care	✔		
49	Kim, J.H., Hur, M.H. and Kim, H.Y.	The efficacy of simulation-based and peer-learning handover training for new graduate nurses	✔		
50	Uhm, J.Y., Lim, E.Y. and Hyeong, J.	The impact of a standardised inter-department handover on nurses' perceptions and			✔

Article no.	Author(s)	Article title	Primary data	Peripheral data	Excluded data
		performance in Republic of Korea			
51	Hovenkamp, G.T., Olgers, T.J., Wortel, R.R., Noltes, M.E., Dercksen, B. and Ter Maaten, J.C.	The satisfaction regarding handovers between ambulance and emergency department nurses: An observational study			✔
52	Makkink, A.W., Stein, C.O.A., Bruijns, S.R. and Gottschalk, S.	The variables perceived to be important during patient handover by South African prehospital care providers		✔	
53	Ballantyne, H.	Undertaking effective handovers in the healthcare setting			✔
54	Hada, A., Jack, L. and Coyer, F.	Using knowledge translation framework to identify barriers and supports to effective nursing handover: A focus group study			✔

Table A2: Detailed information on clarification articles found within primary article content

Article no.	Author(s)	Article title
1	Hunt, G., Wiseman, M., Gray, J., Happel, P., Fabyan, K., Neubauer, B., Walker, E., Barelski, A., Wieher, A. and Crotty, A.	David C. Leach award (1997-2007)
2	Gordon, M.	Training on handover of patient care within UK medical schools
3	Hinding, B., Deis, N., Gornostayeva, M., Gotz, C. and Junger, J.	Patient handover – the poor relation of medical training?
4	The Joint Commission	Improving America's Hospitals: The Joint Commission's Report on Quality and Safety

CHAPTER 3

Article for publication: Limitations Influencing Patient Handover in the South African Healthcare Context: A Mixed-Methods Study

The article conforms to the submission guidelines stipulated by *Taylor and Francis Online*. Conformance to these guidelines was critical to allow submission to *Medical Teacher* (cf. Appendix E).

G.F. Muller[a]* and Prof. H. Brits[b]

[a]Clinical practice component, Free State College of Emergency Care, Bloemfontein, South Africa; [b]Associate Professor/Principal Specialist: Family Medicine, University of the Free State, Bloemfontein, South Africa

mullergf@fshealth.gov.za; National hospital grounds, Free State College of Emergency Care, 7 Roth Avenue, Willows, Bloemfontein, South Africa, 9301.

Limitations Influencing Patient Handover in the South African Healthcare Context: A Mixed-Methods Study

Background: Patient handover is linked to numerous medical errors and lapses in communication between hospital healthcare providers (H-HCPs) and prehospital healthcare providers (P-HCPs). Undergraduate healthcare curricula notoriously limit the interaction between programmes and shifts patient handover education to informal learning. This study aimed to interrogate the inadequacy of handover practices of qualified HCPs and their interprofessional acceptance of these practices.

Methods: A mixed-methods questionnaire was provided to both P-HCPs and H-HCPs. Readjustment of questionnaire distribution was required due to the COVID-19 pandemic restrictions, with questionnaires being compiled and sent electronically.

Results: With a 68% response rate, HCPs indicated little educational interaction regarding patient handover. Real-world use of acronym-based handover tools is limited, while HCPs displayed comfortability with handing over a patient with existing knowledge. Little interprofessional confidence regarding patient handover information indicates minimal interprofessional collaboration toward standardised approaches for patient handover.

Conclusions: Teaching and learning concepts on patient handover will best be implemented using simulation-based medical education. Interprofessional educational discussions are necessary to gauge the needs per healthcare programme. Informal learning sectors require collaboration with existing educational content on patient handover procedures to conform to international standards.

Keywords: patient handover; interprofessional education; healthcare providers; higher education; healthcare curriculum

INTRODUCTION

The inadequacy of patient handover is linked to 24% of overall missed diagnoses in emergency departments, with 10% of deaths being preventable by purely eliminating communication errors (Shahrami *et al*. 2019, p. 1). The period in which a patient's care is handed over between healthcare providers (HCPs) is described as the most vulnerable period in the care continuum (Gordon 2013, p. 1). A rushed patient handover process leads to miscommunication between HCPs and, as such, can lead to crucial information being distorted, lost, or misinterpreted, which affects the continuum of care (Gordon 2013, p. 1). The Joint Commission report of 2007 on quality and safety and the Accreditation Council for Graduate Medical Education (2020) highlight that miscommunication between HCPs is the leading cause of serious events (Stojan *et al*. 2015, pp. 281-282). Insufficient HCP education and Health Professions Education (HPE) in undergraduate and postgraduate medical programmes are the leading cause of an unstandardised approach to patient handover (Hada *et al*. 2018, p. 10).

Patient handover entails conveying essential clinical information between HCPs to ensure the continuity of care in a healthcare system (Makkink *et al.* 2019, p. 87). The Health Professions Council of South Africa (HPCSA) oversees all medical programmes in South Africa. Each HCP registered with these professional boards received higher healthcare education in their specific disciplines, aligned with exit-level outcomes stipulated and controlled by the South African Qualifications Authority (SAQA). According to the SAQA Act of 1995, SAQA is responsible for aligning programme curricula toward the National Qualifications Framework (NQF), which should guide each programme's outcomes (Republic of South Africa 1995). The outcomes in each healthcare programme are embedded in a document that must be adhered to by the higher education institution (HEI), which will allow their learners to graduate.

The only programme that stipulates patient handover as a critical outcome is the prehospital healthcare provider (P-HCP) qualification, namely the Diploma in Emergency Medical Care (DEMC) and the Bachelor of Emergency Medical Care (BEMC), registered as an Emergency Care Practitioner (ECP), rated at an NQF level 6 and 8, respectively. Finding no local literature on disseminating patient handover protocols in HEIs or curricula indicates that the local HEIs do not conform to the World Health Organization's (WHO) guidelines on patient handover. The WHO stipulates that all healthcare programmes must include patient handover as an outcome (Stojan *et al.* 2016, p. 423).

Patient handover education has shifted from classroom education to informal learning during clinical practice rotations in the healthcare system (Starmer *et al*. 2017, p. 230). Informal learning on patient handover has substantial variabilities on how the learner is educated and, more so, on what methods learners are educated (Starmer *et al*. 2017, p. 230). If informal learning forms part of an education method in a healthcare system, the learners are at least introduced to interprofessional education (IPE) and can communicate between various HCPs and qualifications (Stow *et al*. 2017, p. 123). With little control over how the learners retain patient handover skills, the simulated environment could be a valid replacement educational method to construct a deep learning environment on the topic. Incorporating patient handover into simulation-based medical education (SBME) creates the opportunity for authentic learning practices where simulated environments and patients can be reproduced multiple times with memorable and measurable effects on learning (Seaton *et al*. 2019, p. 194).

This study aimed to interrogate the handover practices of qualified HCPs and their interprofessional acceptance of these practices. Educational support, current handover practices or procedures used, and suggested improvements on patient handover protocols in HEIs were explored. Questionnaires completed by HCPs working in the healthcare system

form the basis of this study in terms of obtaining real-world handover procedures and perspectives around other HCPs while highlighting areas of improvement.

METHODS

Research setting

The study was conducted in Bloemfontein, Free State. The healthcare facilities utilised were Pelonomi Academic Hospital, the National District Hospital, and the Mangaung University Community Partnership Programme Community Health Centre. P-HCPs were included, and all were employed by private service providers.

Participants

Two participant groups were used to conduct this study. Hospital healthcare providers (H-HCPs) working in emergency units, casualty units, maternity units, paediatric wards, intensive care units, and healthcare clinics were included as participants for the study. The HCPs targeted were required to hold a higher educational qualification. P-HCPs were sourced from private healthcare services due to the lack of employment of these practitioners in the provincial sector. Only P-HCPs registered with the HPCSA as independent practitioners and who obtained their medical qualification through an HEI were included.

Data collection

A mixed-methods questionnaire was constructed. Thirty-eight questions sought to obtain quantitative data, and four open-ended questions sought to acquire qualitative data. Ninety-six questionnaires were distributed to H-HCPs and P-HCPs. Initially, typed and printed questionnaires would be distributed, but due to the COVID-19 pandemic, the questionnaires were digitalised using Google Forms. All the H-HCPs' and P-HCPs' contact details were obtained, and the online questionnaire was distributed to them. Twenty-six online

questionnaires were sent out. After two weeks, reminder messages were sent out to all H-HCPs and P-HCPs. After one month, the questionnaire response rate had become stagnant, and the online questionnaire was closed.

Resistance from H-HCPs to complete the questionnaire electronically was noted due to financial implications, and printed copies were distributed to the healthcare facilities. Five electronic and 65 printed questionnaires were distributed to the various facilities.

Data analysis

Google Forms captured all online questionnaires on a Microsoft Excel spreadsheet. The quantitative data were analysed by the researcher using graphs and figures. The completed printed questionnaires' data were captured manually to combine and export the data to an Excel spreadsheet. A biostatistician confirmed the accuracy of the analysis conducted by the researcher.

ETHICAL APPROVAL AND CONSENT TO PARTICIPATE

The study's ethical approval was obtained through the University of the Free State's Health Sciences Research Ethics Committee (UFS-HSD2020/0011/2807). Authorisation to conduct research in provincial healthcare facilities was obtained from the Department of Health.

H-HCPs' and P-HCPs' consent was voluntary and was implied with completion of the questionnaire. Confidentiality was maintained by excluding any identifiable questions. No names or identifying information of participants were used in any publications.

RESULTS

Nineteen P-HCP questionnaires were returned, which is calculated as a 73% (19/26) response rate. Forty-four H-HCP questionnaires were returned, which constitutes a 63% (44/70) response rate. The overall response rate is 68% (63/96). The demographical characteristics of

the H-HCP participants are shown in Table 1. The average work experience of HCPs was ten years.

Table 1. Demographical characteristics of healthcare providers (HCPs) working in the provincial hospital system at various levels and units of care

Demographic characteristics of all H-HCPs (N=44)	
Qualifications	
Doctors	41%
Nurses	59%
Units	
Emergency/casualty department	43%
Paediatric ward	16%
Maternity ward	16%
Primary clinic	25%
Experience	
0 – 4 years	11%
5 – 9 years	32%
10 – 14 years	18%
>15 years	21%
Not indicated	18%

The demographical characteristics of P-HCPs are shown in Table 2. The average experience of P-HCPs was 13 years.

Table 2. Demographical characteristics of HCPs working in the private prehospital system at various qualifications

Demographic characteristics of all P-HCPs (N=19)	
Qualifications	
ECP	74%
National Diploma	21%
DEMC	5%
Experience	
0 – 4 years	11%
5 – 9 years	21%
10 – 14 years	32%
>15 years	36%

ECP – Emergency Care Practitioner; DEMC – Diploma Emergency Medical Care

Educational experience

The P-HCP participants indicated that 63% of them had received educational content regarding patient handover, and 68% indicated that the programme or module relied heavily on informal education during work-integrated learning. The H-HCP participants showed equivalent

educational experience in class versus the topic of patient handover being left to informal learning at 73%. The assessment strategies for both P-HCPs and H-HCPs are indicated in Table 3.

Table 3. Assessment methods completed by both P-HCPs and H-HCPs on patient handover

P-HCP assessment tools		H-HCP assessment tools	
Written assessment	74%	Written assessment	50%
SBME	42%	SBME	48%
Role play	48%	Role play	34%

SBME – Simulation Based Medical Education

The P-HCP participants rated the importance of IPE at 32%, while the H-HCP participants at 54%. HCP satisfaction and overall comfortability post-graduation with patient handover in real-world circumstances were rated high, with P-HCP at 89% and H-HCP at 63%. The P-HCP participants indicated that 21% of them had attended a workshop where patient handover discussions were included, and 11% of the H-HCP participants indicated participation in similar workshops.

Prehospital inter-qualification handover

Most P-HCP participants (63%) revealed that they used a standard approach when handing over a patient. The P-HCP participants indicated that 32% of the time, lower-qualified P-HCPs did not conform to any standard. P-HCPs could sometimes (36%) recognise that lower-qualified P-HCPs made use of a standard handover protocol.

In terms of the prehospital continuum of care, 26% of the P-HCP participants indicated that they felt comfortable with the information received related to patients' condition. Thirty-two percent of the P-HCP participants received patient report forms. Due to P-HCPs' environment, 94% felt that the handover time was unprotected from interruptions.

Prehospital to hospital patient handover

With 82% of H-HCP participants indicating their involvement with ambulance personnel, only 54% of the H-HCP participants and 63% of the P-HCP participants used a standardised approach to patient handover. It is also worth highlighting that 50% of the H-HCP participants could follow and recognise a structured process used by ambulance personnel, where the ratio was slightly higher for P-HCP participants at 68%.

Generally, H-HCPs are entrusted with the continuum of care. However, the H-HCP participants indicated that 43% of patient handovers provided sufficient information to secure the continuum of care. In terms of relaying the information in a written patient report form, 80% of the H-HCP participants specified that they received this written report. The H-HCP participants obtained a dedicated area for patient handover only 27% of the time. Corroborating these results, the P-HCP participants noted that 11% of the handovers were protected.

Inter- / Intra-hospital patient handover

The transfer of a patient is sometimes required either between wards, units, or hospitals. The H-HCP participants noted that 50% of them used a standardised approach, tool, or acronym. The same was indicated for receiving a patient, with 48% describing conformance.

The H-HCP participants indicated that 45% of them understand the information received but 57% indicated that they received only enough information to conform to the care continuum adequately. Unfortunately, the same cannot be said for P-HCPs, where 32% of the participants indicated a comfortability level with H-HCP information. Another 32% felt comfortable to continue treating the patient from the information received. The H-HCP participants stated that 77% of them always received documentation from the transferring HCPs, where P-HCPs rated it lower at 53%.

Healthcare provider (HCP) reflection on patient handover protocols/procedures

The P-HCP participants indicated their dissatisfaction with how they conducted patient handover, with only 26% feeling satisfied with the process. The H-HCP participants were slightly more accepting of current practices, with 41% indicating satisfaction. Limited time with minimal privacy left HCPs uniformly receptive to asking questions during the handover.

Comparing the information received from the P-HCP participants regarding the patient's diagnoses after handover, 54% of the H-HCP participants indicated a mismatch in the information, while 52% of the P-HCP participants revealed the same mismatch. Not surprisingly, only 36% of the H-HCP participants trusted the information received from P-HCPs. Only 21% of the P-HCP participants trusted the information they receive, with an alarming 53% neutral stance

The duplication of diagnostical testing following mismatched information was noted, where 68% of the P-HCP participants suggested duplication of diagnostic testing, while 52% of the H-HCP participants indicated duplication. With a continuum of care being the goal, 42% of the P-HCP participants and 63% of the H-HCP participants believed that the information they received allowed for healthcare system continuum.

Formal patient handover protocols: Current stance

With multiple options available to conduct patient handovers, 95% of the P-HCP participants indicated that they utilised face-to-face handovers. Seventy-nine percent received written feedback during patient handover. The H-HCP participants indicated that they made use of much broader aspect procedures, with 73% utilising face-to-face handovers, while 46% used written feedback. Fifty-five percent handed over telephonically between facilities or units. When receiving patients from P-HCPs, 86% of the H-HCP participants indicated conducting handovers face to face, with an alarming 48% indicating handover using written feedback.

Regarding conforming to international standards using acronym-based patient handovers, it appears that the P-HCP participants had more contact with acronyms. Table 4 indicates which variations of the known handover acronyms the P-HCP and H-HCP participants encountered.

The HCPs could indicate more than one option to interrogate how many of the acronyms they had encountered: ISBAR – Introduction, Situation, Background, Assessment, and Recommendations (Burgess *et al*. 2020, p. 2); iSoBAR – Identify, Situation, Observation, Background, Assessment/Action, and Readback/Responsibility (Beament *et al*. 2018, p. 108); ATMIST – Age, Time, Mechanism, Injury/Illness, Signs and symptoms, and Treatment (Peran *et al*. 2020, p. 214); IMIST-AMBO – Identification, Mechanism of injury, Injuries identified, Signs and symptoms, Treatment and trends, Allergies, Medications, Background history, and Other information (Javidan *et al*. 2020, p. S23); MIST – Mechanism of injury, Injuries or Illness, Signs and treatment, and Time (Slope *et al*. 2020, p. 151); ASHICE – Age, Sex, History, Injuries, Condition, and Expected time of arrival (Budd *et al*. 2007, p. 303); and/or I-PASS – Illness severity, Patient summary; Action list, Situational awareness/contingency planning, and Synthesis by the receiver (Shahian *et al*. 2017, p. 2).

Table 4. Patient handover acronyms identified by HCPs

	P-HCP	H-HCP
ISBAR	32%	7%
iSoBAR	21%	9%
ATMIST	16%	2%
IMIST-AMBO	11%	0%
MIST	74%	14%
ASHICE	16%	0%
I-PASS	5%	0%
None recognised	N/A	71%

The need for curricula changes

The patient handover educational strategy is thought to be included in HPE, by using informal learning practices. Ninety-five percent of the P-HCP participants believed that academic

institutions and informal learning must educate learners. The H-HCP participants were not far behind, with 89% confirming the same. Using a structured handover procedure, protocol, or acronym, the continuum of care will be ensured during patient handover.

> [On: Does structured patient handover improve communication?] "*Yes, it does, because if you give it telephonically, you must paint the picture so as to see the patient even if you are not near him/her"* – H-HCP 16 (Clinic).

> [On: Does structured patient handover improve communication?] *"I believe that this would improve patient handover and communication. Currently, there is a complete absence of uniform standard with regard to structured patient handover between healthcare professionals and entities"* – P-HCP 1 (ECP).

Interprofessional communication (IPE)

IPE is a topic that is excluded from most healthcare curricula, which is expressly noted between prehospital and hospital programmes.

> [On: Must medical programmes incorporate IPE for successful communication?] *"I do agree with this. Interprofessional education should receive much attention and deciding on a standard to achieve patient handover on a national level will assist this process. However, the information that is to be handed over is a versatile and dynamic topic and will differ from a healthcare facility and professional based on the required clinical pathway/objective. E.g., an ambulance crew handing over a patient to an ECP (prehospital) will not require the same information as a general practitioner referring a patient to a consultant within a hospital setting. We need to be flexible with our approaches and what is essential on patient handover"* – P-HCP 1 (ECP).

> [On: Must medical programmes incorporate IPE for successful communication?] *"Yes, it should be included in the curriculum to improve communication structures and prepare professionals on how to successfully communicate and convey adequate patient information between respective professionals during handover"* – H-HCP 12 (Nursing – Paediatrics).

HCPs are required to communicate interprofessionally to allow the patient's overall continuum of care, but patient handover might not be a "one-size-fits-all" approach.

> [On: How must educational institutions improve patient handover practices?] *"Firstly, a standard approach needs to be developed to address all the complexities surrounding any given patient's condition. This is difficult, as some would challenge not using the same method for a 'medical' patient as you would for a 'trauma' patient. Similarly, the age of the patient (newborn, infant, child, adult, senior) can further complicate the development of a standard approach. I believe that greater collaboration between the various disciplines at an educational level needs to be established to understand what everyone else wants to know when they receive a patient. Then a standard can be developed from those identified needs to be implemented across the board"* – P-HCP 9 (National Diploma).

Incorporating patient handover protocols into healthcare curricula while building on knowledge through informal learning delivers a positive result in the continuum of care.

> [On: Elaborate on why patient handover should be included in both educational institution and through learning in practice.] *"Less time wasted going over the same information over and over. A standard way would allow junior doctors a comfortable template to fall back on, especially when rushed or interrupted. Time is so valuable,*

and a lot of time is wasted by having to convey unnecessary details over and over" – H-HCP 5 (Doctor – Emergency Department).

[On: Elaborate on why patient handover should be included in both educational institution and through learning in practice.] *"Standardised teaching in the theory phase goes hand in hand with practical learning; thus, incorporating a standard handover procedure in both phases will allow for better learning to apply (versus learning to pass). This will also ensure that any learner in the practical phase will regularly be exposed to the procedure, and it will become a natural part of their practice, regardless of the specific discipline. This will also increase the focus of any practitioner to obtain a full clinical picture, with past and current history, of the patient"* – P-HCP 9 (National Diploma).

Conforming to a particular educational method where deep learning has taken place is crucial for the overall success in a crowded healthcare curriculum.

[On: How must educational institutions improve patient handover practices?] *"This was not part of my training. It will be good to provide the theory and show them practically how to implement different ways of doing it. Continuous simulation sessions will be a good practice area"* – H-HCP 10 (Nursing – Paediatrics).

[On: How must educational institutions improve patient handover practices?] *"They should incorporate it whenever there are simulations-based scenarios both from the handover between prehospital providers, and prehospital providers and hospital staff, it is important to do that, as it will enhance patient safety, quality improvement and patient care continues"* – P-HCP 7 (ECP).

DISCUSSION

Patient handover education should be a focused outcome of medical healthcare curricula. Even though most healthcare curricula content differs, the one similarity is that HCPs must be able to communicate interprofessionally. Integrated and interdependent healthcare teams should function and communicate successfully for the common goal of improved healthcare (Margalit *et al*. 2009, p. 166). Neither P-HCPs nor H-HCPs are pleased with how patient handover is being conducted, without any IPE that enhances healthcare systems. However, even though HCPs are unhappy with the patient handover, most indicated that they are comfortable with it.

Educational experiences

HCPs indicated substandard education on patient handover with heavy reliance on informal learning. Clinical facilitators in HEIs have little control over what students are taught and what constitutes topics' validity. Professional silos in healthcare education have provided students with unrealistic representations of isolated healthcare. Most HCPs indicated no assessments occurring in programmes. The data show that H-HCPs conform more to role-play assessment, where P-HCPs highlighted minimal assessment in any form.

With minimal educational attention paid to patient handover and assessment, HCPs overwhelmingly indicated comfortability to conduct patient handover.

Handover practices

Patient handover practices appear to conform to face-to-face handovers; alongside receiving a written report of the patient's condition and treatment protocol. Without dedicated spaces where HCPs can conduct patient handover, the continuum of care will be fragmented. Focusing on patient handovers from P-HCPs, it was identified that patient handover to various HCPs can occur up to three times (Bost *et al.* 2012, pp. 135-136). It was also observed that H-HCPs were multitasking throughout the handover, which required multiple follow-up questions to

understand why the patient was brought to the hospital (Bost *et al*. 2012, p. 136). A qualitative study conducted in 2010 highlighted that H-HCPs became dismissive toward P-HCPs solely because the P-HCPs "rambled on" with information not deemed necessary by the H-HCPs (Javidan *et al.* 2020, p. S26). The study concluded that a high frequency of interruptions could be linked to the mismatch of what P-HCPs believed was essential and what the H-HCPs required to continue care (Javidan *et al.* 2020, p. S27).

Handover tools

Internationally, various healthcare systems appear to conform with utilising acronym-based patient handover. Each facility or unit should conform to using a particular handover protocol to allow functionality. The data indicate that P-HCPs show more knowledge of handover acronyms, with the MIST acronym being favoured. An astonishing 71% of H-HCPs indicated no recognition of internationally utilised handover acronyms, which highlights a significant education gap. Due to this gap, a study conducted in 2015 concluded that a one-day workshop on the SBAR acronym before starting work-integrated learning improved all students' confidence. This enhanced confidence helped the students to adjust to each facility's or unit's handover protocol.

The data overwhelmingly show that all HCPs favoured using standardised patient handover structures but indicated limited interaction with international protocol.

Curricula changes

Educational interventions require modern teaching and learning techniques, with the participants suggesting SBME. The inclusion of IPE in healthcare curricula is necessary to improve and harness collaborative communication strategies. Most of the HCPs indicated that assessing patient handover was essential to instil deep learning. Assessment without

appropriate feedback is, however, counterproductive. Feedback from simulations indicates a holistic application of healthcare concepts (Krackov 2013, p. 323).

With IPE in HPE known to receive little focus, implementing the TeamSTEPPS curriculum while focusing on softer skill sets such as communication will see drastic results in the interprofessional commitment to patient safety (Chen *et al.* 2019, p. 6). Removing the silos in healthcare will improve the low number of 36% of H-HCPs experiencing trust when receiving patient information.

A limitation of this study might be the participant sample size of H-HCP and P-HCP, and a more extensive participation group might be required to gauge the transferability of the results. Even though the data correspond with the lack of stipulated exit-level outcomes described in SAQA documents, obtaining programme-specific curricula could indicate other forms of HPE.

POTENTIAL SOLUTIONS ON HANDOVER ACRONYMS

The author recommends the use of the following handover acronyms, but further research is required on the topic. The IMIST-AMBO acronym is a comprehensive handover tool utilised with stable patients, received through a casualty department or emergency unit. The ATMIST handover acronym can be used in emergency units with a patient who requires urgent medical care or in a somewhat busy emergency unit. The MIST acronym is for critical patients and crowded trauma units and provides just enough information for the immediate care continuum. The ASHICE acronym is functional during inter-facility transfers, where the receiving facilities require constant feedback about the transferring patient's progress.

The ISBAR and iSoBAR handover acronyms can be used between doctor and nurse handover. The I-PASS acronym is used and preferred for bedside handover procedures between nursing staff.

CONCLUSIONS

This study aimed to investigate the status of patient handover protocols and procedures and how teaching and learning can improve the continuum of care. Currently, little formal HPE on patient handovers is provided in any of the investigated healthcare programmes. Alongside HPE, little focus is placed on assessing patient handover while providing constructive feedback. The various healthcare professions are not pleased with how patient handover is conducted but they have become comfortable with the status quo of minimal interprofessional communication or education occurring. The teaching, learning, and implementation of patient handover procedures require greater collaboration between healthcare programme-specific facilitators and HCPs in the healthcare system. IPE would break down the silos in healthcare education and allow the various healthcare facilities to function collaboratively to enhance the care continuum. For effective patient handover, interprofessional communication is critical. Interprofessional communication will improve topics of interests per programme and unearth various issues for discussion, which will result in improved patient care and, more so, the continuum of care. For successful communication, HEIs and healthcare programmes must be open to the idea of collaborative education. Patient handover can be implemented in SBME to improve patient management and how effective the responsibility for patient management can be transferred between HCPs. Feedback should be presented post-assessment via the facilitator. Student feedback must be received after clinical shift rotations to allow the educational environment to build and link literature with practicability in real-world healthcare.

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PRACTICE POINTS

- No standard patient handover procedure or protocol exists in the healthcare system in which the study was conducted.
- Educational support for patient handover follows no standard approach, with all HCPs aligning patient handover procedures to what they deem important.
- There is little professional trust between the various HCPs regarding patient information received during patient handover.
- Minimal utilisation of international patient handover acronyms persists.
- HCPs are confident in their ability to hand over a patient without neglecting critical information.

DISCLOSURE STATEMENT

The authors declare no conflict of interest. The authors alone are responsible for the content and writing of this article.

NOTES ON CONTRIBUTORS

G.F. oversaw the conceptualisation of the study, protocol, and development. H.B. assisted in the conceptualisation and planning of the study, as well as the final approval of manuscripts.

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APPENDIX: TABLES

Table A1. Demographical characteristics of HCPs working in the provincial hospital system at various levels and units of care

Demographic characteristics of all H-HCPs (N-44).	
Qualifications	
Doctors	41%
Nurses	59%
Units	
Emergency/Casualty Department	43%
Paediatric ward	16%
Maternity ward	16%
Primary Clinic	25%
Experience	
0 – 4 years	11%
5 – 9 years	32%
10 – 14 years	18%
>15 years	21%
Not indicated	18%

Table A2. Demographical characteristics of HCPs working in the private prehospital system with various qualifications

Demographic characteristics of all P-HCPs (N-19).	
Qualifications	
ECP	74%
National Diploma	21%
DEMC	5%
Experience	
0 – 4 years	11%
5 – 9 years	21%
10 – 14 years	32%
>15 years	36%

ECP – Emergency Care Practitioner; DEMC – Diploma Emergency Medical Care

Table A3. Assessment methods utilised by both P-HCPs and H-HCPs on patient handover

P-HCP assessment tools		H-HCP assessment tools	
Written assessment	74%	Written assessment	50%
SBME	42%	SBME	48%
Role play	48%	Role play	34%

SBME – Simulation Based Medical Education

Table A4. Patient handover acronyms identified by HCPs

Acronym	P-HCP	H-HCP
ISBAR	32%	7%
iSoBAR	21%	9%
ATMIST	16%	2%
IMIST-AMBO	11%	0%
MIST	74%	14%
ASHICE	16%	0%
I-PASS	5%	0%
None recognised	N/A	71%

The HCPs could indicate more than one option to interrogate how many of the acronyms they had encountered. ISBAR – Introduction; Situation; Background; Assessment; Recommendations (Burgess *et al.* 2020, p. 2); iSoBAR – Identify; Situation; Observation; Background; Assessment/Action; Readback/Responsibility (Beament *et al*. 2018, p. 108); ATMIST – Age; Time; Mechanism; Injury/Illness; Signs and symptoms; Treatment (Peran *et al*. 2020, p. 214); IMIST-AMBO – Identification; Mechanism of injury; Injuries identified; Signs and symptoms; Treatment and trends; Allergies; Medications; Background history; Other information (Javidan *et al*. 2020, p. S23); MIST – Mechanism of injury; Injuries or illness; Signs and treatment; Time (Slope *et al*. 2020, p. 151); ASHICE – Age; Sex; History; Injuries; Condition; Expected time of arrival (Budd *et al*. 2007, p. 303); and I-PASS – Illness severity; Patient summary; Action list; Situational awareness/contingency planning; Synthesis by the receiver (Shahian *et al*. 2017, p. 2).

CHAPTER 4

CONCLUSIONS AND RECOMMENDATIONS

4.1 INTRODUCTION

In Chapter 1, the reader received an orientation to the study regarding current training in South Africa. A description of the process followed to obtain relevant literature on patient handover (theory) and handover practices. This chapter was followed by a rapid literature review in Chapter 2 and a research article in Chapter 3 that addressed patient handover practices. This final chapter discusses the conclusions, recommendations, and the limitations of the study.

4.2 CONCLUSION

This study aimed to investigate the current patient handover stance in HEIs and real-world circumstances in the healthcare system.

Research Question 1: Do HEIs incorporate patient handover into their current curricula?

The researcher conducted a curriculum content review of the MBChB, Nursing, and Prehospital Emergency Medicine programmes to answer this question. Data gathered from SAQA documentation indicated that communication skills form part of each curriculum. The BEMC and HCert in EMC were the only programmes that discuss communication to hand over a patient. However, the dissemination of this information is rather vague, with communication being broadly defined in the curricula. The DEMC explained that communication regarding patient handover must be done according to local protocols and procedures. No specific training or assessment of patient handover practices is addressed in any of the SAQA documents.

Research Question 2: How do HEIs disseminate information on patient handover, and what best practices are recommended for patient handover training?

From the rapid literature review, it was clear that data on educational training on patient handover appear to match international literature on global efforts to educate student HCPs on how to hand over a patient, what information to include, and to what extent information should be relayed according to the patient's medical condition. IPE between prehospital and other healthcare programmes is scarce. The data showed more interaction between hospital-based programmes. This exclusion of prehospital emergency medicine from the healthcare system appears to be generalised to more than just patient handover. The massive number of varying qualifications found in the prehospital environment does not help H-HCPs to understand these qualifications, and more importantly, what management protocol each qualification conforms to.

Research Question 3: What are healthcare practitioners' perceptions and opinions in public and private sectors about patient handover in their respective medical environments?

Local protocols and procedures are extremely limited regarding patient handover. H-HCPs indicated no fruitful interaction with any form of patient handover protocol or in using acronym-based patient handovers. P-HCPs have more significant experience with handover protocols but are mostly limited to a particular acronym, named MIST. Incorporation of patient handover into the various healthcare programmes' local curricula indicated that most HCPs were educated on handing over a patient, although minimally in the classroom or practical setting. Overwhelmingly, patient handover was left to informal training during clinical rotations, which removed any facilitator quality assurance in terms of what and how the student is taught. Alongside education, the assessments were also found to be inadequate to provide feedback to the student. Practical application and evaluation of using SBME to enhance deep learning is not incorporated correctly, or not at all.

Even though HCPs had minimal educational experience with patient handover, with the majority indicating that they did not like how patient handover was conducted, it was alarming that most demonstrated confidence in how they handed over patients. Another alarming discovery was the negative interprofessional trust highlighted between the various qualifications in the prehospital environment. At the same time, the H-HCPs showed little trust in the information received from P-HCPs. This lack of trust revealed duplication of diagnostic testing by most HCPs. By eliminating the duplication of diagnostic tests, the healthcare system can save an exorbitant amount of money, which can be spent more wisely on staff development and patient management.

4.3 RECOMMENDATIONS

Interprofessional collaboration is required between healthcare programmes. This collaboration does not necessarily have to include student interaction but facilitator discussions around interprofessional influences on patient management would be valuable. A needs analysis is required from each healthcare programme to include curricular educational topics of interprofessional interest. Inclusion of formal teaching and learning concepts on patient handover must be included in all healthcare related curricula. More emphasis must be placed on the assessment and feedback regarding patient handover, particularly through simulation based medical education. Interprofessional collaboration might provide the platform for standardised approaches to patient handover that has relevance in a functional healthcare system.

4.4 LIMITATIONS OF THE STUDY

The researcher identified the following limitations of the study:

- SAQA does not stipulate how the topic of patient handover must be assessed by the various healthcare programmes. An attempt was made to obtain individual healthcare programme curricula from the universities offering the researched programmes. Due to the researcher not receiving any information from the universities, the methods of data gathering were changed to exclude the university-specific healthcare curricula.
- The researcher would have preferred to use printed questionnaires and hand them out to the various healthcare facilities and HCPs, but due to the COVID-19 pandemic with its related restrictions, the questionnaires had to be digitalised using Google Forms. All P-HCPs completed their responses using the online questionnaire method. After the digitalised questionnaire was sent to the various H-HCPs, the healthcare facilities confirmed that they require these questionnaires as printed copies, which delayed the process of data gathering.

4.5 CONCLUDING REMARK

This study identified a gap between what is taught on patient handover and how it should be taught and assessed. Formal training programmes can be adapted to bridge this gap between what is taught and what is done in clinical practice.

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APPENDICES

APPENDIX A: HEALTH SCIENCES RESEARCH ETHICS COMMITTEE (HSREC) APPROVAL

UNIVERSITY OF THE FREE STATE
UNIVERSITEIT VAN DIE VRYSTAAT
YUNIVESITHI YA FREISTATA

UFS·UV
HEALTH SCIENCES
GESONDHEIDSWETENSKAPPE

Health Sciences Research Ethics Committee

06-Jul-2020

Dear **Mr George Muller**

Ethics Clearance: **Investigating curriculum-based training by higher education institutions on patient handover**
Principal Investigator: **Mr George Muller**
Department: **Office of the Dean: Health Sciences Department (Bloemfontein Campus)**

APPLICATION APPROVED

Please ensure that you read the whole document

With reference to your application for ethical clearance with the Faculty of Health Sciences, I am pleased to inform you on behalf of the Health Sciences Research Ethics Committee that you have been granted ethical clearance for your project.

Your ethical clearance number, to be used in all correspondence is:**UFS-HSD2020/0011/2807**

The ethical clearance number is valid for research conducted for one year from issuance. Should you require more time to complete this research, please apply for an extension.

We request that any changes that may take place during the course of your research project be submitted to the HSREC for approval to ensure we are kept up to date with your progress and any ethical implications that may arise. This includes any serious adverse events and/or termination of the study.

A progress report should be submitted within one year of approval, and annually for long term studies. A final report should be submitted at the completion of the study.

The HSREC functions in compliance with, but not limited to, the following documents and guidelines: The SA National Health Act. No. 61 of 2003; Ethics in Health Research: Principles, Structures and Processes (2015); SA GCP(2006); Declaration of Helsinki; The Belmont Report; The US Office of Human Research Protections 45 CFR 461 (for non-exempt research with human participants conducted or supported by the US Department of Health and Human Services- (HHS), 21 CFR 50, 21 CFR 56; CIOMS; ICH-GCP-E6 Sections 1-4; The International Conference on Harmonization and Technical Requirements for Registration of Pharmaceuticals for Human Use (ICH Tripartite), Guidelines of the SA Medicines Control Council as well as Laws and Regulations with regard to the Control of Medicines, Constitution of the HSREC of the Faculty of Health Sciences.

For any questions or concerns, please feel free to contact HSREC Administration: 051-4017794/5 or email EthicsFHS@ufs.ac.za.

Thank you for submitting this proposal for ethical clearance and we wish you every success with your research.

Yours Sincerely

Dr. SM Le Grange
Chair : Health Sciences Research Ethics Committee

Health Sciences Research Ethics Committee
Office of the Dean: Health Sciences
T: +27 (0)51 401 7795/7794 | E: ethicsfhs@ufs.ac.za
IRB 00011992; REC 230408-011; IORG 0010096; FWA 00027947
Block D, Dean's Division, Room D104 | P.O. Box/Posbus 339 (Internal Post Box G40) | Bloemfontein 9300 | South Africa
www.ufs.ac.za

APPENDIX B: DEPARTMENT OF HEALTH APPROVAL LETTER

health
Department of
Health
FREE STATE PROVINCE

22 April 2020

Mr G Muller
Depart: Office of the Dean
UFS

Dear Mr. G Muller

Subject: Investigating curriculum-based training by higher education institutions on patient handover.

- Please ensure that you read the whole document. Permission is hereby granted for the above – mentioned research on the following conditions:
- Participation in the study must be voluntary.
- A written consent by each participant must be obtained.
- Serious Adverse events to be reported to the Free State department of health and/ or termination of the study
- Ascertain that your data collection exercise neither interferes with the day to day running of **National, Pelonomi Hospital and MUCPP Clinic, FSSON (Main Campus), FSCEC** nor the performance of duties by the respondents or health care workers.
- Confidentiality of information will be ensured and please do not obtain information regarding the identity of the participants.
- **Research results and a complete report should be made available to the Free State Department of Health on completion of the study (a hard copy plus a soft copy).**
- Progress report must be presented not later than one year after approval of the project to the Ethics Committee of the University of the Free State and to Free State Department of Health.
- Any amendments, extension or other modifications to the protocol or investigators must be submitted to the Ethics Committee of the University of the Free State and to Free State Department of Health.
- **Conditions stated in your Ethical Approval letter should be adhered to and a final copy of the Ethics Clearance Certificate should be submitted to** sebeelats@fshealth.gov.za / makenamr@fshealth.gov.za **before you commence with the study**
- No financial liability will be placed on the Free State Department of Health
- **Please discuss your study with Institution Manager on commencement for logistical arrangements see 2nd page for contact details.**
- Department of Health to be fully indemnified from any harm that participants and staff experiences in the study
- Researchers will be required to enter in to a formal agreement with the Free State department of health regulating and formalizing the research relationship (document will follow)
- **As part of feedback you will be required to present your study findings/results at the Free State Provincial health research day**

Trust you find the above in order.

Kind Regards

Dr D Motau
HEAD: HEALTH
Date: _____

Head : Health
PO Box 227, Bloemfotein, 9300
4th Floor, Executive Suite, Bophelo House, cnr Maitland and, Harvey Road, Bloemfotein
Tel: (051) 408 1646 Fax: (051) 408 1556 e-mail:khusami@fshealth.gov.za/fshealth.gov.za/chikobvup@fshealth.gov.za

APPENDIX C: UNIVERSITY OF JOHANNESBURG (UJ) APPROVAL LETTER

8 June 2020

Mr George Muller (Student number: 2011043961)
Division of Health Sciences Education
University of the Free State

Dear Mr Muller

PERMISSION TO CONDUCT RESEARCH AT THE UNIVERSITY OF JOHANNESBURG

The request for permission to conduct research at our university for the project titled *Investigation Curriculum-based Training by Higher Education Institutions on Patient Handover* refers. Permission is granted to conduct this study at the University of Johannesburg.

Sincerely

Dr Carol Nonkwelo
Executive Director: Research and Innovation
Email: cnonkwelo@uj.ac.za

APPENDIX D: GATEKEEPER'S CONDITIONAL APPROVAL

UNIVERSITY OF THE FREE STATE
UNIVERSITEIT VAN DIE VRYSTAAT
YUNIVESITHI YA FREISTATA
UFS UV

Office of the Vice-Rector: Research and Internationalisation
Kantoor van die Viserektor: Navorsing en Internasionalisering

09-Mar-2020

Dear Mr George Muller

UFS AUTHORITIES APPROVAL

Research Project Title:
Investigating curriculum-based training by higher education institutions on patient handover

This letter serves as confirmation that your request to collect data from students and/or staff members at the University of the Free State for your research project has been approved **provided that you also have ethical clearance for the research from the ethics committee at the University of the Free State**.

Please make sure that you also obtain your ethics clearance letter containing your reference number from the ethics committee after you have received this letter before you conduct your research.

Kind Regards

PROF RC WITTHUHN
VICE-RECTOR: RESEARCH & INTERNATIONALISATION
CHAIR: SENATE RESEARCH ETHICS COMMITTEE

205 Nelson Mandela Drive/Rylaan
Park West/Parkwes
Bloemfontein 9301
South Africa/Suid-Afrika

P.O. Box / Posbus 339
Bloemfontein 9300
South Africa / Suid-Afrika
T:+27(0)51 401 2116
F:+27(0)51 401 3752
WitthuhnRC@ufs.ac.za
www.ufs.ac.za

APPENDIX E: PELONOMI APPROVAL

pelonomi hospital
Department of Health
Pelonomi Tertiary Hospital
FREE STATE PROVINCE

DATE:	03 December 2020		ENQUIRIES
TO:	Mr George Muller Office of the Dean University of Free State Bloemfontein 9301	FROM:	Dr U Sirsawy Acting: Head of Clinical Services usamasirsawy@yahoo.com 051 405 1936 Bloemfontein 9301

SUBJECT: Investigating curriculum-based training by higher education institution on patient handover

Pelonomi Tertiary Hospital **grants you permission** to conduct researches/studies and the following criteria must be met.

- [X] That you obtain ethical clearance from the human research ethics committee of the relevant university and approval by the Head of Health of the Free State.
- [X] That the Hospital incurs no cost in the course of your research.
- [X] That access to the staff and patients at the Pelonomi Hospital will not interrupt the daily provision of services.
- [X] That prior to conducting the research you will liaise with the supervisors of the relevant sections and introduce yourself with permission letter and to make arrangements with them in a manner that is convenient to the sections.

Yours Sincerely

.....

Dr U Sirsawy
Acting: Head of Clinical Services
Pelonomi Tertiary Hospital

APPENDIX F: BACHELOR OF MEDICINE AND BACHELOR OF SURGERY CURRICULUM REQUEST

BACKGROUND AND INSTITUTIONAL CURRICULUM REQUEST

George F. Muller
Lecturer: Clinical Practice Assistant
Free State College of Emergency Care
Department of Health, Free State
Master's Degree in Health Professions Education
georgemuller50@gmail.com
+27 76 373 4269

Dear Dr Lynette van der Merwe

ASCERTAIN IF STRUCTURED PATIENT HANDOVER FORMS PART OF THE CURRICULUM

I am currently occupying the position of paramedic lecturer at the Free State College of Emergency Care.

I am in the process of writing a thesis to obtain the Magister degree in Health Professions Education (HPE) in the Faculty Sciences at the University of the Free State (Student Number: 2011043961). The title of my research is: Investigating curriculum based training by higher education institutions on patient handover.

Ethics reference number: **UFS-HSD2020/0011/2807** Health Sciences Research Ethics Committee (UFS).

My promotor is:

Prof. Hanneke Brits
Associate Professor/Principal Specialist: Family Medicine
Faculty of Health Sciences
University of the Free State

UNIVERSITY OF THE FREE STATE
UNIVERSITEIT VAN DIE VRYSTAAT
YUNIVESITHI YA FREISTATA

UFS·UV
HEALTH SCIENCES
GESONDHEIDSWETENSKAPPE

The **aim** of the study is to investigate curriculum-based training by higher education institutions on patient handover.

The following **research questions** will be addressed by the objectives of this study:

1. Do higher education institutions incorporate patient handover into their curricula?
2. How do higher education institutions disseminate information on the process of structured patient handover in their curricula?
3. What are the methods used at individual higher education institutions abroad with regard to incorporating structured patient handover into their curricula?
4. What is the perception and opinion of healthcare practitioners in the public and private sector regarding patient handover in their respective medical environments?

To achieve the aim and address the research questions of the study a **sequential approach** will be followed to pursue the objectives:

1. To gain a deeper understanding of the current status of curriculum-based education on the topic of structured patient handover as it is incorporated into medicine, nursing and prehospital EMC programmes. (Document review and clarification questionnaire)
2. To obtain insight into the trends and practices of global structured patient handover training curricula. (Focused literature study)
3. To determine the perceptions of medical practitioners regarding structured patient handover. (Healthcare provider questionnaire)

Kindly note that the information received during the project will only be used for research purposes and will not be released for any academic and/or employment-related performance evaluation, promotion, and/or disciplinary purposes. The findings of this study will be made public to other educationalists in HPE through paper presentations at conferences and seminars and by the publishing of articles in applicable journals. The researcher undertakes to report the results in a way that will adequately protect the participants' identities.

I therefore kindly request the following information:

- An electronic copy of the specified **programme's curriculum**, named Bachelor of Medicine, Bachelor of Surgery (MBChB).
- Please identify a relevant contact person with whom the clarification questionnaire can be conducted.
    - This person should have in-depth knowledge of the outcomes in the programme's curriculum. A consent form will be provided if the researcher requires clarification on the curriculum obtained prior to completion of the clarification questionnaire.

Please reply via email to **georgemuller50@gmail.com**

Should you have any specific questions, my contact details are as follows:

Telephone number: 051 492 1380
Cellular number: 076 373 4269
Email address: georgemuller50@gmail.com
Postal address: Office 36, National Hospital Grounds, Free State College of Emergency Care, 7 Roth Avenue, Willows, Bloemfontein.

Thank you for taking the time to read this communication and I sincerely hope that you will be willing to contribute to this project.

Yours sincerely

Mr George Muller
Paramedic Lecturer
Free State College of Emergency Care
Department of Health

Contact details of the Health Sciences Research Ethics Committee at the University of the Free State:

Maré Marais
+27 51 401 7795
EthicsFHS@ufs.ac.za

APPENDIX G: NURSING – CURRICULUM REQUEST

BACKGROUND AND INSTITUTIONAL CURRICULUM REQUEST

George F. Muller
Lecturer: Clinical Practice Assistant
Free State College of Emergency Care
Department of Health, Free State
Master's Degree in Health Professions Education
georgemuller50@gmail.com
+27 76 373 4269

Dear Dr Hagemeister

ASCERTAIN IF STRUCTURED PATIENT HANDOVER FORMS PART OF THE CURRICULUM

I am currently occupying the position of paramedic lecturer at the Free State College of Emergency Care.

I am in the process of writing a thesis to obtain the Magister degree in Health Professions Education (HPE) in the Faculty Sciences at the University of the Free State (Student Number: 2011043961). The title of my research is: Investigating curriculum based training by higher education institutions on patient handover.

Ethics reference number: **UFS-HSD2020/0011/2807** Health Sciences Research Ethics Committee (UFS).

My promotor is:

Prof. Hanneke Brits
Associate Professor/Principal Specialist: Family Medicine
Faculty of Health Sciences
University of the Free State

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Kindly note that the information received during the project will only be used for research purposes and will not be released for any academic and/or employment-related performance evaluation, promotion, and/or disciplinary purposes. The findings of this study will be made public to other educationalists in HPE through paper presentations at conferences and seminars and by the publishing of articles in applicable journals. The researcher undertakes to report the results in a way that will adequately protect the participants' identities.

I therefore kindly request the following information:

- An electronic copy of the specified **programme's curriculum**, named Bachelor of Nursing.
- Please identify a relevant contact person with whom the clarification questionnaire can be conducted.
    - This person should have in-depth knowledge of the outcomes in the programme's curriculum. A consent form will be provided if the researcher requires clarification on the curriculum obtained prior to completion of the clarification questionnaire.

Please reply via email to **georgemuller50@gmail.com**

Should you have any specific questions, my contact details are as follows:

Telephone number: 051 492 1380
Cellular number: 076 373 4269
Email address: georgemuller50@gmail.com
Postal address: Office 36, National Hospital Grounds, Free State College of Emergency Care, 7 Roth Avenue, Willows, Bloemfontein.

Thank you for taking the time to read this communication and I sincerely hope that you will be willing to contribute to this project.

Yours sincerely

Mr George Muller
Paramedic Lecturer
Free State College of Emergency Care
Department of Health

Contact details of the Health Sciences Research Ethics Committee at the University of the Free State:

Maré Marais
+27 51 401 7795
EthicsFHS@ufs.ac.za

APPENDIX H: UJ – CURRICULUM REQUEST

BACKGROUND AND INSTITUTIONAL CURRICULUM REQUEST

George F. Muller
Lecturer: Clinical Practice Assistant
Free State College of Emergency Care
Department of Health, Free State
Master's Degree in Health Professions Education
georgemuller50@gmail.com
+27 76 373 4269

Dear Mr Bernard van Tonder

ASCERTAIN IF STRUCTURED PATIENT HANDOVER FORMS PART OF THE CURRICULUM

I am currently occupying the position of paramedic lecturer at the Free State College of Emergency Care.

I am in the process of writing a thesis to obtain the Magister degree in Health Professions Education (HPE) in the Faculty Sciences at the University of the Free State (Student Number: 2011043961). The title of my research is: Investigating curriculum based training by higher education institutions on patient handover.

Ethics reference number: **UFS-HSD2020/0011/2807** Health Sciences Research Ethics Committee (UFS).

My promotor is:

Prof. Hanneke Brits
Associate Professor/Principal Specialist: Family Medicine
Faculty of Health Sciences
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4. What is the perception and opinion of healthcare practitioners in the public and private sector regarding patient handover in their respective medical environments?

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2. To obtain insight into the trends and practices of global structured patient handover training curricula. (Focused literature study)
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Kindly note that the information received during the project will only be used for research purposes and will not be released for any academic and/or employment-related performance evaluation, promotion, and/or disciplinary purposes. The findings of this study will be made public to other educationalists in HPE through paper presentations at conferences and seminars and by the publishing of articles in applicable journals. The researcher undertakes to report the results in a way that will adequately protect the participants' identities.

I therefore kindly request the following information:

- An electronic copy of the specified **programme's curriculum**, named Diploma in Emergency Medical Care (DEMC).
- Please identify a relevant contact person with whom the clarification questionnaire can be conducted.
    - This person should have in-depth knowledge of the outcomes in the programme's curriculum. A consent form will be provided if the researcher requires clarification on the curriculum obtained prior to completion of the clarification questionnaire.

Please reply via email to **georgemuller50@gmail.com**

Should you have any specific questions, my contact details are as follows:

Telephone number: 051 492 1380
Cellular number: 076 373 4269
Email address: georgemuller50@gmail.com
Postal address: Office 36, National Hospital Grounds, Free State College of Emergency Care, 7 Roth Avenue, Willows, Bloemfontein.

Thank you for taking the time to read this communication and I sincerely hope that you will be willing to contribute to this project.

Yours sincerely

Mr George Muller
Paramedic Lecturer
Free State College of Emergency Care
Department of Health

Contact details of the Health Sciences Research Ethics Committee at the University of the Free State:

Maré Marais
+27 51 401 7795
EthicsFHS@ufs.ac.za

APPENDIX I: HEALTHCARE PROVIDER (HCP) QUESTIONNAIRE: CASUALTY & EMERGENCY DEPARTMENT

INVESTIGATING CURRICULUM BASED TRAINING BY HIGHER EDUCATION INSTITUTIONS ON PATIENT HANDOVER

Dear Participant

The purpose of this questionnaire is to ascertain how patient handover is conducted in a real-world environment.

This questionnaire will be handed to you for completion and should not take longer than **10** minutes to complete in full. Please answer all questions truthfully and to the best of your ability.

Participation is voluntary and will cost you nothing; nor will you receive any remuneration for your participation. All information will be treated in a strictly confidential manner. By completing this questionnaire, you consent to take part in the study, but anonymity will be protected throughout data interpretation and reported findings.

Ethics reference number: **UFS-HSD2020/0011/**2807. Health Sciences Research Ethics Committee (UFS).

Thank you very much for your time in completing this questionnaire. I am confident that your feedback on this questionnaire will make a valuable contribution towards the development and implementation of patient handover education in higher education medical programmes.

Yours sincerely

Mr George Muller
Telephone number: 051 492 1380
Cellular phone: 076 373 4269
Email address: georgemuller50@gmail.com

HEALTHCARE BACKGROUND

1. Which working group do you form part of?

Medical doctor		
Nursing		
Other (please specify)		

2. Which division do you form part of?

Emergency unit	
ICU	
Paediatrics	
Maternity	
Clinic	

3. How many years of patient management experience do you have? .....

EDUCATIONAL BACKGROUND

To the best of your recollection, please indicate on a scale of 0-5 how your institution's medical programme educated you on the following: 0 = nothing, 5 = 100%

4. Did your educational institution teach you how to hand over a patient?

0	1	2	3	4	5

5. Did this programme rely heavily on in-field handover teaching?

0	1	2	3	4	5

6. Did this programme assess you during **written** assessments on how to hand over a patient?

0	1	2	3	4	5

7. Did this programme assess you during a **patient simulation** on how to hand over a patient?

0	1	2	3	4	5

8. Did this programme assess you during **role-play** sessions on how to hand over a patient?

0	1	2	3	4	5

9. How comfortable were you to hand over a patient after you qualified and started working in the healthcare system?

0	1	2	3	4	5

10. Did the programme incorporate interprofessional patient handover during your period of study?

0	1	2	3	4	5

PATIENT HANDOVER

11. Have you ever attended a workshop or training where patient handover strategies were discussed?

Yes	No

12. PREHOSPITAL TO HOSPITAL TRANSFER

a. Are you involved in patient handover for receiving patients from ambulance practitioners?

Always	Frequently	Sometimes	Rarely	Never

b. Do **you** use a standard approach or tool (acronym) to hand over a patient?

Always	Frequently	Sometimes	Rarely	Never

c. Do **they** use a standard approach or tool (acronym) to hand over a patient?

Always	Frequently	Sometimes	Rarely	Never

d. Is the handover time protected from interruptions or outside noises?

Always	Frequently	Sometimes	Rarely	Never

e. Does the handover provide you with sufficient information to care adequately for the patient?

Always	Frequently	Sometimes	Rarely	Never

f. Is it clear what you need to do, or to continue to do, with medical management from a patient handover?

Always	Frequently	Sometimes	Rarely	Never

g. Do you receive a copy of the relevant patient handover paperwork after the patient handover is completed?

Always	Frequently	Sometimes	Rarely	Never

13. INTER- and INTRA-HOSPITAL TRANSFER

a. Are you involved in patient handover occurring in the **hospital** setting?

Always	Frequently	Sometimes	Rarely	Never

b. Do **you** use a standard approach or tool (acronym) to hand over a patient?

Always	Frequently	Sometimes	Rarely	Never

c. Do **they** use a standard approach or tool (acronym) to hand over a patient?

Always	Frequently	Sometimes	Rarely	Never

d. Is the handover time protected from interruptions or outside noises?

Always	Frequently	Sometimes	Rarely	Never

e. Is there an allocated area to use where you can focus on handing over or receiving a patient handover?

Always	Frequently	Sometimes	Rarely	Never

f. Does the handover provide you with sufficient information to care adequately for the patient?

Always	Frequently	Sometimes	Rarely	Never

g. Is it clear what you need to do, or to continue to do, with medical management from a patient handover?

Always	Frequently	Sometimes	Rarely	Never

h. Do you receive a copy of the relevant patient handover paperwork after the patient handover is completed?

Always	Frequently	Sometimes	Rarely	Never

14. Please complete the following questions per your personal experiences during patient handover:

a. I am satisfied with how we conduct patient handover.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

b. I feel comfortable to ask questions during a patient handover report.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

c. I actively listen to the practitioner handing over the patient and relay this information to the treating practitioner.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

d. The patient's medical condition correlates with the information I receive from a prehospital practitioner.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

e. I trust the patient handover information I receive from a prehospital practitioner.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

f. I think diagnostics tests are duplicated due to information not being provided during patient handover.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

g. The information I receive during patient handover guarantees the continuity of care and safety on patient management.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

h. The information I receive is up to date with the current medical status of the patient.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

15. How is patient handover conducted when a patient is either received or handed over to **another unit or hospital**? (You can mark more than one.)

Face to face		
Telephonically		
Electronically (tablet or phone)		
Written on paper and read back		
Other (please specify)		

16. How is patient handover conducted when a patient is either received or handed over to **ambulance personnel**? (You can mark more than one.)

Face to face		
Telephonically		
Electronically (tablet or phone)		
Written on paper and read back		
Other (please specify)		

17. Please indicate below if you have ever encountered any of the following abbreviations or acronyms related to patient handover? (Please mark all applicable.)

ISBAR	
ISOBAR	
ATMIST	
IMIST-AMBO	
MIST	
ASHICE	
I-PASS	

OPEN-ENDED QUESTIONS

18. In your opinion, does using a structured patient handover method improve communication between healthcare professionals in your area of operation?

19. Do you think medical programmes must incorporate interprofessional handover as part of the curriculum to formulate successful communication structures between various qualifications? Please elaborate on your answer.

20. Please indicate below where you think the topic of patient handover should be taught? (You can choose either one or both, but please elaborate on your answer in the next question.)

Educational institution	
Through learning in practice	
Both	

21. Please elaborate on your answer, as noted in Question 20 above. (Why did you choose that option and how do you think educational institutions should implement the teaching of patient handover?)

22. What is your opinion on how higher education institutions can improve the topic of patient handover in various healthcare professional courses?

APPENDIX J: HCP QUESTIONNAIRE: PREHOSPITAL

INVESTIGATING CURRICULUM BASED TRAINING BY HIGHER EDUCATION INSTITUTIONS ON PATIENT HANDOVER

Dear Participant

The purpose of this questionnaire is to ascertain how patient handover is conducted in a real-world environment.

This questionnaire will be handed to you for completion and should not take longer than **10** minutes to complete in full. Please answer all questions truthfully and to the best of your ability.

Participation is voluntary and will cost you nothing; neither will you receive any remuneration for your participation. All information will be treated in a strictly confidential manner. By completing this questionnaire, you consent to take part in the study, but anonymity will be protected throughout data interpretation and reported findings.

Ethics reference number: **UFS-HSD2020/0011/**2807. Health Sciences Research Ethics Committee (UFS).

Thank you very much for your time in completing this questionnaire. I am confident that your feedback on this questionnaire will make a valuable contribution towards the development and implementation of patient handover education in higher education medical programmes.

Yours sincerely

Mr George Muller
Telephone number: 051 492 1380
Cellular phone: 076 373 4269
Email address: georgemuller50@gmail.com

HEALTHCARE BACKGROUND

1. Which working group do you form part of?

Emergency care practitioner (ECP)		
National Diploma in EMC (NDip)		
Diploma practitioner		
Other (please specify)		

2. How many years of patient management experience do you have? ……

EDUCATIONAL BACKGROUND

To the best of your recollection, please indicate on a scale of 0-5 how your institution's medical programme educated you on the following: 0 = nothing, 5 = 100%

3. Did your educational institution teach you how to hand over a patient?

0	1	2	3	4	5

4. Did this programme rely heavily on in-field handover teaching?

0	1	2	3	4	5

5. Did this programme assess you during **written** assessments on how to hand over a patient?

0	1	2	3	4	5

6. Did this programme assess you during a **patient simulation** on how to hand over a patient?

0	1	2	3	4	5

7. Did this programme assess you during **role-play** sessions on how to hand over a patient?

0	1	2	3	4	5

8. How comfortable were you to hand over a patient after you qualified and started working in the healthcare system?

0	1	2	3	4	5

9. Did the programme incorporate interprofessional patient handover during your period of study?

0	1	2	3	4	5

PATIENT HANDOVER

10. Have you ever attended a workshop or training where patient handover strategies were discussed?

Yes	No

11. PREHOSPITAL INTER-QUALIFICATIONS HANDOVER

a. Are you involved in patient handover for receiving patients from ambulance practitioners?

Always	Frequently	Sometimes	Rarely	Never

b. Do **you** use a standard approach or tool (acronym) to hand over a patient?

Always	Frequently	Sometimes	Rarely	Never

c. Do **they** use a standard approach or tool (acronym) to hand over a patient?

Always	Frequently	Sometimes	Rarely	Never

d. Is the handover time protected from interruptions or outside noises?

Always	Frequently	Sometimes	Rarely	Never

e. Does the handover provide you with sufficient information to care adequately for the patient?

Always	Frequently	Sometimes	Rarely	Never

f. Is it clear what you need to do, or to continue to do, with medical management from a patient handover?

Always	Frequently	Sometimes	Rarely	Never

g. Do you receive a copy of the relevant patient handover paperwork after the patient handover is completed?

Always	Frequently	Sometimes	Rarely	Never

12. HEALTHCARE FACILITY HANDOVER

a. Do **you** use a standard approach or tool (acronym) to hand over a patient?

Always	Frequently	Sometimes	Rarely	Never

b. Do **they** use a standard approach or tool (acronym) when receiving a patient?

Always	Frequently	Sometimes	Rarely	Never

c. Is the handover time protected from interruptions or outside noises?

Always	Frequently	Sometimes	Rarely	Never

d. Is there an allocated area to use where you can focus on handing over or receiving a patient handover?

Always	Frequently	Sometimes	Rarely	Never

e. Does the handover provide you with sufficient information to care adequately for the patient?

Always	Frequently	Sometimes	Rarely	Never

f. Is it clear what you need to do, or to continue to do, with medical management from a patient handover?

Always	Frequently	Sometimes	Rarely	Never

g. Do you receive a copy of the relevant patient handover paperwork after the patient handover is completed?

Always	Frequently	Sometimes	Rarely	Never

13. Please complete the following questions per your personal experiences during patient handover:

a. I am satisfied with how we conduct patient handover.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

b. I feel comfortable to ask questions during a patient handover report.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

c. I actively listen to the practitioner handing over the patient and relay this information back to the practitioner.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

d. The patient's medical condition correlates with the information I receive from the practitioner providing the handover.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

e. I trust the patient handover information I receive from a prehospital practitioner.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

f. I think diagnostics tests are duplicated due to information not being provided during patient handover.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

g. The information I receive during patient handover guarantees the continuity of care and safety on patient management.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

h. The information I receive is up to date with the current medical status of the patient.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

14. How is patient handover conducted when a patient is either received or handed over to **another unit or hospital**? (You can mark more than one.)

Face to face		
Telephonically		
Electronically (tablet or phone)		
Written on paper and read back		
Other (please specify)		

15. How is patient handover conducted when a patient is either received or handed over to **ambulance personnel**? (You can mark more than one.)

Face to face		
Telephonically		
Electronically (tablet or phone)		
Written on paper and read back		
Other (please specify)		

16. Please indicate below if you have ever encountered any of the following abbreviations or acronyms related to patient handover? (Please mark all applicable.)

ISBAR	
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OPEN-ENDED QUESTIONS

17. In your opinion, does using a structured patient handover method improve communication between healthcare professionals in your area of operation?

18. Do you think medical programmes must incorporate interprofessional handover as part of the curriculum to formulate successful communication structures between various qualifications? Please elaborate on your answer.

19. Please indicate below where you think the topic of patient handover should be taught? (You can choose either one or both, but please elaborate on your answer in the next question.)

Educational institution	
Through learning in practice	
Both	

20. Please elaborate on your answer, as noted above. (Why did you choose that option and how do you think educational institutions should implement the teaching of patient handover?)

21. What is your opinion on how higher education institutions can improve the topic of patient handover in various healthcare professional courses?

APPENDIX K: MEDICAL TEACHER SUBMISSION GUIDELINES

Taylor & Francis
Author Services

Advice to authors on preparing a manuscript

NB: Please follow any specific instructions for authors provided by the Editor of the journal

Font: Times New Roman, 12 point. Use margins of at least 2.5 cm (1 inch). Further details of how to insert special characters, accents and diacritics are available here.

Title: Use bold for your article title, with an initial capital letter for any proper nouns.

Authors' names: Give the names of all contributing authors on the title page exactly as you wish them to appear in the published article.

Affiliations: List the affiliation of each author (department, university, city, country).

Correspondence details: Please provide an institutional email address for the corresponding author. Full postal details are also needed by the publisher, but will not necessarily be published.

Abstract: Indicate the abstract paragraph with a heading or by reducing the font size. Advice on writing abstracts is available here.

Keywords: Please provide five or six keywords to help readers find your article. Advice on selecting suitable keywords is available here.

Headings: Please indicate the level of the section headings in your article:

- First-level headings (e.g. Introduction, Conclusion) should be in bold, with an initial capital letter for any proper nouns.
- Second-level headings should be in bold italics, with an initial capital letter for any proper nouns.
- Third-level headings should be in italics, with an initial capital letter for any proper nouns.
- Fourth-level headings should also be in italics, at the beginning of a paragraph. The text follows immediately after a full stop (full point) or other punctuation mark.

Tables and figures: Indicate in the text where the tables and figures should appear, for example by inserting [Table 1 near here]. The actual tables and figures should be supplied either at the end of the text or in a separate file as requested by the Editor. Ensure you have permission to use any figures you are reproducing from another source. Advice on artwork is available here. Advice on tables is available here.

Running heads and **received dates** are not required when submitting a manuscript for review.

If your article is accepted for publication, it will be copy-edited and typeset in the correct style for the journal.

If you have any queries, please contact us at authorqueries@tandf.co.uk, mentioning the full title of the journal you are interested in, or see our Author Services homepage.

APPENDIX L: EDITING CERTIFICATE

GRAMMAR GUARDIANS

05 May 2021

To whom it may concern

Re: Proofreading and academic editing: Mr G.F. Muller

I, J.L. van Aswegen of Grammar Guardians, hereby confirm proofreading and academic editing of the thesis entitled "Investigating Curriculum Based Training on Patient Handover within Higher Education Institutions" by George Muller (student number 2011043961) in April 2021.

Please contact me on 082 811 6857 or at jeanne@grammarguardians.co.za regarding any queries that may arise.

Kind regards,

J.L. van Aswegen

Grammar Guardians